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No. 6016 LONDON: SATURDAY, DECEMBER 17, 1938 CCXXXV

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

The Hæmolytic Anæmias of Childhood. By Prof. L. G. PARSONS, F.R.C.P. 1395

Late Results in Diverticulitis. By J. P. LOCKHART-MUMMERY, F.R.C.S. 1401

Fluid Balance in Menière's Disease. By T. CAWTHORNE, F.R.C.S., and MARY N. FAWCETT, M.R.C.S. (*with charts*) 1404

Menière's Syndrome. By R. PEACOCK, F.R.C.S. (*with chart*) 1409

Treatment of Rheumatoid Arthritis with a New Gold Salt. By Prof. S. J. HARTFALL, M.R.C.P., H. G. GARLAND, M.R.C.P., and W. GOLDIE, M.R.C.P. 1410

CLINICAL AND LABORATORY NOTES

Agranulocytic Angina Following Administration of M. & B. 693. By R. V. COXON, M.B., and J. R. FORBES, M.R.C.P. (*with chart*) 1412

Case of Associated Rupture of Lung and Spleen. By G. J. CUNNINGHAM, M.D. 1413

Staining of Vaginal Smears. By H. H. UCKO, M.D. 1413

MEDICAL SOCIETIES

Royal Society of Medicine: Section of Therapeutics and Pharmacology: Addison's Disease 1414

British Institute of Radiology: Contact Therapy 1415

North Western Tuberculosis Society: Bronchiectasis 1416

REVIEWS AND NOTICES OF BOOKS

Medical Practice in Residential Schools. By F. G. Hobson, F.R.C.P. 1417

Special Pathology and Therapeutics of Diseases of Domestic Animals. By F. Hutyra and others 1418

Handbook of Hæmatology. Edited by Prof. Hal Downey 1418

LEADING ARTICLES

HUNGER IN SPAIN 1419

AURAL VERTIGO 1419

NAMELESS INCAPACITY 1420

DENTAL AUTONOMY 1421

ANNOTATIONS

Salvage of Scholarship 1422

The Cardio-pulmonary Function Test 1422

Dangerous Drugs Restrictions 1422

The late Prof. Gram 1423

Another Year of Radium Research 1423

Treatment of Chronic Alcoholism 1423

A Radiological Exhibition 1424

The King's Fund 1424

Multiple Anæsthesia 1424

Control of Puerperal Fever 1425

"Hodgkin's Disease" of the Stomach 1425

PUBLIC HEALTH

Measles in London, 1935–36 1431

Infectious Disease in England and Wales 1442

GRAINS AND SCRUPLES

From an Anatomist—III 1432

CONTROL OF THE COMMON FEVERS

Small-pox. Reviewed by Dr. J. J. BUTTERWORTH (*with chart*) 1426

SPECIAL ARTICLES

Medicine and the Law: Divorce for Insanity—What is Continuous Detention? 1429

Scotland: Megaloblastic Anæmias 1430

THE LANCET 100 Years Ago 1434

CORRESPONDENCE

Protection of Science and Learning (Sir Wm. Beveridge) 1435

Radiology and Obstetrics (Mr. Aleck Bourne, F.R.C.S.) 1435

Heat Therapy (Sir Leonard Hill, F.R.S.) 1435

The "Iron Lung" (Dr. G. P. Crowden) (*illus.*) 1436

Chemotherapy of Gonorrhœa (Dr. J. Marshall) 1436

Treatment of Trigeminal Neuralgia (Dr. Hildred Carlill) 1436

Diphtheria Diagnosed While You Wait (Dr. E. A. Burns) 1437

Children in Catalonia (Dr. Audrey Russell) 1437

Adapting the Limb to the Stump (Mr. E. R. Desoutter) 1437

OBITUARY

John Sinclair, M.R.C.P. 1442

PARLIAMENT

Treatment of Cancer—Miners' Nystagmus—The Lords Discuss Hospital A.R.P. 1438

Question Time: Overcrowding—Cancer and the Bill—Cheap Milk Schemes—Sale of Contraceptives from Slot Machines 1441

MEDICAL NEWS

University of Oxford 1443

University of Cambridge 1443

University of London 1443

Royal College of Surgeons of England 1443

University of Dublin 1443

British Association of Radiologists 1443

British Association 1443

National University of Ireland 1443

British Postgraduate Medical School 1444

Westminster Hospital Dinner 1444

Ophthalmological Congresses 1444

Medical Register: Restoration after Non-Penal Removal 1431

University College Hospital 1425

New Bureau of Dairy Science 1442

International Hospital Association 1448

NOTES, COMMENTS, AND ABSTRACTS

Medical Education in the U.S.S.R. 1447

In Memory of Brown-Séquard 1447

Aerodynamics of the Fireplace 1448

Handling the Young Child 1448

Surgical Parchment 1446

Appointments 1445

Vacancies 1445

Births, Marriages, Deaths 1446

Medical Diary 1446

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CONTENTS

SECTION I
THE HISTORY

CHAP.
1. THE SIX MAJOR SYMPTOMS
2. THE SIX MAJOR SYMPTOMS (*contd.*)
3. MINOR SYMPTOMS
4. THE AUXILIARY HISTORY

SECTION II
PHYSICAL EXAMINATION OF THE CHEST

5. INSPECTION
6. PALPATION
7. PERCUSSION
8. AUSCULTATION

SECTION III
SPECIAL INVESTIGATIONS

9. THE SPUTUM
10. BLOOD EXAMINATIONS—PLEURAL FLUID
11. RADIOLOGY OF THE CHEST
12. SPECIAL DIAGNOSTIC METHODS

SECTION IV
DISEASES OF THE RESPIRATORY TRACT

13. THE NOSE
14. THE MOUTH
15. THE LARYNX
16. THE TRACHEA AND BRONCHI

SECTION IV
(*continued*)

CHAP.
17. ASTHMA
18. BRONCHIECTASIS
19. TUMOURS OF THE BRONCHI
20. CHEST INJURIES — DISORDERS OF THE PULMONARY CIRCULATION
21. EMPHYSEMA
22. COLLAPSE OF THE LUNG
23. PNEUMONIA
24. BRONCHO-PNEUMONIA
25. PNEUMONITIS
26. LUNG ABSCESS
27. PULMONARY TUBERCULOSIS
28. PULMONARY TUBERCULOSIS (*contd.*)
29. TREATMENT OF PULMONARY TUBERCULOSIS
30. NON-TUBERCULOUS CHRONIC LUNG INFECTIONS
31. FIBROSIS OF THE LUNG
32. THE PLEURA
33. "PLEURISY"
34. EMPYEMA
35. TUMOURS OF THE PLEURA
36. THE MEDIASTINUM
37. THE DIAPHRAGM

INDEX

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ADDRESSES AND ORIGINAL ARTICLES

THE HÆMOLYTIC ANÆMIAS OF CHILDHOOD *

BY LEONARD G. PARSONS, M.D. Lond., F.R.C.P.

PROFESSOR OF CHILDREN'S DISEASES IN THE UNIVERSITY OF BIRMINGHAM; PHYSICIAN TO THE CHILDREN'S HOSPITAL, AND THE UNITED HOSPITAL, BIRMINGHAM

IT is obviously impossible within the compass of an hour adequately to discuss the hæmolytic anæmias of childhood, but I propose briefly to review them, and, in the light of the study by my colleagues and myself of some 120 cases, to attempt their integration.

When I started to write this lecture I took down from my bookshelves a battered volume purchased thirty-seven years ago—my first text-book of medicine—written by one of my most distinguished predecessors in this lectureship, and which in my opinion has a charm which seems to have eluded the writers of present-day texts. I refer, of course, to Osler's Medicine. In it I found that the anæmias were divided into two main groups: the primary or idiopathic group, which included chlorosis and a form called by its discoverer, Addison, idiopathic anæmia; and the secondary group, which included every other type of anæmia which were so-called because they were secondary to some known or assumed to be known factor. Such a classification has only recently become obsolete, because it is now recognised that anæmia is really more a symptom than a disease and is always secondary to some known or unknown cause. The attachment of personal names, whether these be Teutonic, as von Jaksch; American, as Cooley and Lederer; or even British, as Addison and Witts, to certain clinical syndromes is futile as a contribution to the classification of anæmia, however excusable it may be as a form of hero-worship. Moreover, hero-worship has its drawbacks, because the worshippers sometimes foist on to their hero ideas and statements quite foreign to him. I feel sure that von Jaksch would not recognise many of the descriptions of the anæmia he has been supposed to father; indeed, I believe that he himself was rather uncertain of the characteristics of his own offspring.

CLASSIFICATION OF ANÆMIAS

Most of the present-day classifications divide the anæmias into those due to a deficiency of or an inability to utilise the various things—iron, hæmatinic factor, vitamins—required in the manufacture of red cells; and those due to blood loss, either by gross hæmorrhage or by the destruction of the red blood-cell or its precursors. It is, of course, quite possible that a given anæmia may come under both heads. For instance, a hæmolytic anæmia may occur in patients suffering from deficiency anæmia; moreover, hæmolysis may be so severe and the consequent call for new red cells so great that the stores of building materials are used up and a deficiency anæmia is added to a hæmolytic one. Furthermore, continued blood loss from excessive menstruation, piles, and other hæmorrhagic conditions, leads to depletion of the iron stores, and, unless this is made good by increased iron intake, an iron-deficiency anæmia will result. Also, if from some congenital trait the red cells are abnormal, these may be more vulnerable than normal cells.

In recent years the realisation of the part played in anæmia by the red-cell factory—the bone-marrow and, in the fœtus and young infant, the extra-medullary foci—has led to the conception that the blood is a living tissue made up of at least three components: the red cell and its precursors, the granular white cell and its precursors, and the blood-platelet and its precursors. These have been termed respectively the erythron, the leucon, and the thrombon.

Chiefly as the result of clinical observation it is known that the red cell passes through a regular series of changes in its evolution from the reticulum cell of the marrow to the erythrocyte in the peripheral blood. To ensure this sequence or maturation certain materials have to be furnished to the bone-marrow, and in the absence of any of these the particular change for which it is responsible does not take place and maturation is thereby held up at definite levels. Under such conditions the marrow usually undergoes hyperplasia, although hypoplastic changes sometimes occur, as for instance in some cases of cretinism and scurvy. In pernicious anæmia the hyperplasia is due to megaloblastosis and in iron-deficiency anæmia to normoblastosis; if liver is supplied in the one case and iron in the other, the marrow returns to normal. In anæmia consequent upon severe hæmorrhage or blood destruction hyperplasia of the marrow also occurs as part of the mechanism of cure; should, however, the injury be severe or lethal, hypoplasia or even aplasia may occur. Nevertheless there is considerable difference between the hyperplasia due to blood destruction and that due to deficiency, since evidences of the cellular activity of the former are found in the blood stream, whereas the latter is "as physiologically ineffective as the obvious cellular aplasia of other marrows" (Castle and Minot 1936).

In the hæmolytic group reticulocytes form a conspicuous feature of the blood film and are not infrequently accompanied by an increase in granular leucocytes and immature granular cells. In the deficiency anæmias the characteristic features are the presence of nucleated red cells and large or small erythrocytes, a paucity of reticulocytes, and often a diminished granular cell count. If the supply of hæmatinic factor is insufficient, maturation is held up at the megaloblastic level and megaloblasts and megalocytes appear; but, if the deficiency is in iron and hæmoglobin forming factors, maturation is held up at the normoblastic level and microcytes and normoblasts are formed. Hence, in the blood-loss group, reticulocytes usually predominate conspicuously over nucleated forms, whereas in the deficiency group the reverse occurs.

If the call on the marrow is prolonged, as in chronic hæmolytic anæmia, the hyperplasia may be so severe that absorption or expansion of bone takes place. I have never found any bone changes associated with the hyperplasia of nutritional anæmia, although I have seen the converse—hypoplasia of the marrow and osteosclerosis—in the anæmia of cretinism. The extramedullary hæmopoietic foci, although active at birth, normally soon cease to function but for some months remain as shadow factories which in time of emergency can be called into action, and in hæmolytic anæmia of infants they show hyperplasia.

* The Schorstein lecture for 1938 delivered at the London Hospital on Oct. 13th.

The conception of the essential unity of the red cell in the blood stream and of its precursors in the hæmopoietic factory, and of the fact that certain essential materials are required for its development, has been one of the great features of the hæmatological renaissance of the last decade and a half. Because of this conception, it is better to speak of "erythronoclastic" anæmia, thereby indicating that the whole erythron is affected, rather than of "hæmolytic" anæmia, which focuses attention on the peripheral blood changes to the exclusion of the bone-marrow. Nevertheless the word "hæmolytic" is so firmly ingrained in medical terminology and so much more euphonious that I shall use it; but in so doing I am adopting the reprehensible practice of holding a candle to the devil.

HÆMOLYTIC ANÆMIAS

According to a recent leading article in THE LANCET (1938) the hæmolytic anæmias form an unsatisfactory disease group for which there is no clear nor accepted definition and a useful dumping-ground for obscure blood diseases. These statements are no doubt true, but it seems to me that the various clinical manifestations, which have been elevated into separate disease syndromes, may be linked together and explained by regarding them as varying responses of the erythron and not, as in deficiency anæmia, the holding up of maturation at certain definite levels and the removal of that "hold up" when the deficiency is rectified. Furthermore, the character of such erythronic response is conditioned by:—

(1) The part of the erythron most severely affected.

(2) The severity and length of time over which the injury lasts.

(3) Abnormalities of the erythron, rendering it more liable to injury—e.g., in acholuric jaundice, sickle-cell anæmia, Cooley's anæmia, and paroxysmal nocturnal hæmoglobinuria.

(4) Abnormalities of the serum rendering the erythron more liable to injury—e.g., the presence of hæmolysins; absence of anti-hæmolysins; alteration in blood lipoids; presence of chemicals; the toxins of infection; bacteria; poisons; and allergic states (fava-bean and pollen hæmolytic anæmia).

As a result of the different varieties of the erythronic response there are produced: the recognised forms of hæmolytic anæmia; aregenerative anæmia; aplastic anæmia; erythroblastæmia; erythroleucoblastæmia; bone changes; and reticulosis. Thus, should the bone-marrow be severely affected, there may be at the outset an aregenerative phase with diminished red and white cell count, agranulocytosis, and thrombocytopenia; later, when recovery begins, or if the injury is not so severe or falls more particularly on the mature erythrocyte, there is a marrow hyperplasia with reticulocytosis, leucocytosis, and plentiful blood-platelets. If the injury is still less severe, but continues over a long period, the marrow hyperplasia may produce bone changes. If the injury is severe and prolonged, an aplastic picture may occur, and sometimes overactivity of the reticular system in the marrow leads to the production of reticulin fibrils which replace the normal marrow tissue. Such a reactive reticulosis connects the hæmolytic anæmias with the reticuloses and with the myelophthisic anæmias.

The other chief criticism levelled against the existence of hæmolytic anæmia is that there is seldom any evidence of how hæmolysis has been brought about. There is also a great deal of truth in this criticism. We know that hæmolysis can be produced by certain chemicals—e.g., phenylhydrazine and sulphanilamide—and by hæmolysis, as in the paroxysmal hæmoglobinurias associated with cold and sleep. The problem, however, is not quite so simple, because Rhoads and Miller (1937) have demonstrated that certain substances, such as phenol and amidopyrine taken by mouth are harmless if a good diet is also taken but, given with a deficient diet, cause a severe sudden anæmia, which they presume to be hæmolytic. Further, Dacie, Israëls, and Wilkinson (1938) have shown that a *p*H-labile lysin, similar to that causing the hæmolysis in paroxysmal nocturnal hæmoglobinuria, is found in normal serum—in other words, the fundamental abnormality in that condition lies in the red cells rather than in the serum.

Josephs (1938), on the contrary, believes that hæmolytic anæmia may be due to lack of some substance normally present in plasma, because he has isolated from human and pig blood plasma a substance which reduces, if it does not completely inhibit, abnormal hæmolysis in certain hæmolytic anæmias. The suggestion has also been made that hæmolysis may be due to the formation of lysolecithin from lecithin in the blood-serum, this being probably the way in which cobra toxin acts. Experimentally, small amounts of lysolecithin and certain hæmolysins (Dameshek and Schwartz 1938) produce spherocytosis, and it has been suggested that the spherocytosis of acholuric jaundice is produced in this way.

Finally, the question of infection causing hæmolysis either directly or by its action on hæmolysins, anti-hæmolysins, or abnormal cells is of great importance. I think we may say with confidence that the commonest cause of hæmolytic anæmia is either an infection or a lysin. The importance of infection is seen in many acute and chronic infections; thus, the picture produced by an acute infection may be indistinguishable from the acute hæmolytic anæmia of Lederer or icterus gravis; and chronic infections account for many of the mild orthochromic normocytic anæmias, which are so often called secondary anæmias. Infections may occur during the course of hæmolytic anæmia, and it is often difficult to tell which is the correct sequence, infection leading to anæmia or anæmia leading to infection. According to Castle and Minot (1936), however, "the anæmia associated with many types of chronic infection, and considered in the past to be hæmolytic, is now recognised as due more to depression of the bone-marrow than to blood destruction." It seems obvious from this statement that they do not recognise the importance of marrow lesions in hæmolytic anæmia, since it surely implies that a hæmolytic anæmia is concerned only with destruction of the cells in the blood stream. Actually the phrase "depression of the marrow" exactly describes the aregenerative phase of an erythronoclastic anæmia.

Accepting as a working hypothesis the explanation of the hæmolytic anæmias of childhood which I have put forward, let us see what clinical forms can be grouped under that head. Castle and Minot accept as true examples of hæmolytic anæmia the anæmia of familial and acquired hæmolytic jaundice; sickle-cell anæmia; the acute anæmia of paroxysmal hæmoglobinuria; the acute hæmolytic anæmia of Lederer; and hæmolysis from such extrinsic causes as poisons and infections. They maintain, however, that "Cooley's anæmia and the anæmias associated with erythroblastosis of the new-born, although considered by some authors to be hæmolytic in origin, probably are due mainly to defective blood production"—a statement which they appear to base on the high degree of erythroblastæmia in these conditions.

The work of Minot and his colleagues is so brilliant, and their standards are so exact, that I feel reluctant to criticise their statements; but, since they cite me as one who upholds the hæmolytic origin of erythroblastosis fœtalis, it may not be presumption on my part to defend that view.

In my opinion a hæmolytic anæmia—except in the aregenerative or aplastic stage—shows a high and sustained reticulocytosis, contrasting with the reticulocyte "kick" which occurs when the missing factor is supplied in a deficiency anæmia; further, there are increased bilirubin in the blood and urobilinogen and urobilin in the urine. Poikilocytosis and anisocytosis are present, and the anæmia is orthochromic or hyperchromic. In an anæmia with such characters erythroblastæmia may occur—especially in infants—and cannot be accepted as excluding it from the hæmolytic group. This erythroblastæmia, which may include both megaloblasts and normoblasts, is often associated with activity of the extramedullary hæmopoietic centres.

ERYTHROBLASTOSIS FŒTALIS VEL NEONATORUM

Erythroblastosis fœtalis includes three clinical conditions—hydrops fœtalis, icterus gravis, and congenital hæmolytic anæmia—and is characterised pathologically by active extramedullary hæmopoietic centres in addition to an active bone-marrow—i.e., erythroblastosis—and often shows a high degree of erythroblastæmia. The reasons which make me regard this condition as hæmolytic may be briefly listed thus:—

(1) Although erythroblastæmia in marked degree occurs in icterus gravis, the number of nucleated cells varies in different cases and at different times, and they are sometimes completely absent at first.

(2) Erythroblasts occur in fœtal blood and may therefore reasonably be expected to be present in the new-born child if, for any reason, the extramedullary foci are active; actually, erythroblasts are often present in the normal new-born full-term child, sometimes in numbers which appear pathological.

(3) Some cases of hydrops fœtalis show little or no pathological evidence of an erythroblastic process, in that the extramedullary foci are only slightly developed or may even be absent.

(4) Some cases of congenital hæmolytic anæmia do not show erythroblastæmia until recovery begins.

(5) The anæmia persisting after the fading of the jaundice in icterus gravis is typical of the recovering phase of hæmolytic anæmia, showing as it does a high degree of reticulocytosis, a positive indirect van den Bergh, and a granular leucocytosis (hence sometimes called erythroleucoblastosis fœtalis), although there may also be considerable numbers of nucleated red blood-cells.

(6) Sepsis or syphilis may produce a picture clinically and hæmatologically exactly similar to icterus gravis at any time during the first fortnight of life.

(7) The occurrence of kernicterus, with symptoms of involvement of the basal ganglia, and the development three or four years later of an impaired liver-tolerance, as shown by intravenous glucose-tolerance tests, or of cirrhosis hepatis in certain cases of icterus gravis are evidence of the action of a toxin.

I think that these three manifestations of erythroblastosis are due to an unknown toxin causing hæmolysis; hydrops for some time before birth, icterus just before and at birth, and congenital hæmolytic anæmia after birth. The degree of erythroblastosis probably depends on the degree of development of fœtal erythropoietic centres and is, in my opinion, a response to hæmolysis and not a primary pathological condition. It is, of course, reasonable to argue that the presence of erythroblasts in the young infant has not the significance it would have in later life, since it may occur if anything recalls the extramedullary foci into action; nevertheless it is apparently the fact of erythroblastæmia which causes Castle and Minot to exclude erythroblastosis of the new-born from the hæmolytic anæmias.

ACUTE HÆMOLYTIC ANÆMIA

Acute hæmolytic anæmia of the Lederer type may occur at any age, the two youngest patients in our series being six weeks and three months old. The onset is sudden and severe with pyrexia and sometimes intestinal symptoms followed by severe pallor, which reaches its maximum in one to seven days and is often associated with much respiratory distress. Jaundice may be severe but is usually only slight, and the urine may show naked-eye or microscopic blood or hæmoglobinuria. Splenomegaly in various degrees is common, the liver and lymph nodes may be enlarged, and petechiæ and bruising may occur. The hæmoglobin may fall as low as 20 per cent. and the red cells to under a million per cubic millimetre. The anæmia is often hyperchromic and in severe cases may show at first an aregenerative phase. Later, during recovery, there is an intense marrow reaction, shown by conspicuous reticulocytosis and a leucocytosis with many immature granular cells. Anisocytosis, poikilocytosis, polychromasia, normoblasts, and megaloblasts are also present, although in our experience the erythroblastæmia has not been so prominent as in erythroblastosis fœtalis. The presence of megaloblasts and macrocytes may be due to exhaustion of the hæmatinic factor or to anoxæmia as the result of the anæmia. The hæmatological picture of acute hæmolytic anæmia, therefore, may be exactly similar to that of a baby recovering from icterus gravis. The prognosis is serious, since most of the children die unless treated by repeated blood transfusion, and sometimes even this is ineffective.

It is interesting to note that the granular leucocytosis may occur before reticulocytosis, as if the marrow can put out new white cells before it can deliver new red cells. Another interesting fact is that sometimes transfusion damps down a reticulocytosis, as if the bone-marrow recognises that, in view of the gift of red cells from an outside source, it can take a longer rest. We have never observed any radiographic changes in the bones of patients suffering from Lederer's anæmia. Since the onset of this illness may be either dramatically acute or spread over a few days, I have been tempted to speak of acute and sub-acute varieties of hæmolytic anæmia, but these differ only in the rapidity of onset.

CASES CONNECTING ERYTHROBLASTOSIS FŒTALIS WITH THE LEDERER TYPE OF ACUTE HÆMOLYTIC ANÆMIA

Although the Lederer type of acute hæmolytic anæmia is rare under the age of six months, we have observed examples of anæmia in younger infants which form a connecting link between it and erythroblastosis fœtalis. These children were normal at birth, and pallor was noticed either after the disappearance of the normal icterus or later. Sometimes a child previously noticed to be pale showed an increase in pallor shortly before coming under observation. When seen these children were very pale and often showed some splenomegaly and an excess of urobilin and urobilinogen in the urine, and—although one child aged eleven weeks had generalised œdema—none ever showed severe jaundice or other signs of icterus gravis; their blood pictures, however, were

exactly similar to those of icterus gravis and acute hæmolytic anæmia.

"VON JAKSCH'S ANÆMIA"

It has been our contention that many children said to be suffering from von Jaksch's anæmia are in reality the victims of a somewhat chronic form of hæmolytic anæmia. The condition regarded in this country as von Jaksch's anæmia was more frequent twenty-five years ago than at present. It usually occurs in a well-nourished child under three years of age, is of insidious onset, and has a good prognosis. The child is waxy pale, has splenomegaly, hepatomegaly, and often also rickets. The anæmia is severe, and there is usually at some time during the illness a leucocytosis up to 30,000 per c.mm.—2–6 per cent. of these cells being of the myelocyte type—anisocytosis, polychromatophilia, nucleated red cells sometimes in large numbers, and a normal fragility. Von Jaksch (1889, 1890) did not give a clear account of this anæmia and failed to mention one of its most striking features, erythroblastæmia, which was first described by Luzet (1891); moreover, subsequent writers have added details which have resulted in considerable confusion and in the inclusion of types of anæmia which in this country would not have been admitted into that category.

The von Jaksch's syndrome occurs during what may be called the deficiency period of child life—i.e., the age-period of infantile scurvy and rickets; and, although von Jaksch stated definitely that rickets was not a causal factor, the common association of the two conditions has led many to regard rickets in that light. The difficulty in eliminating deficiency factors is well illustrated in the following case:—

A male child, aged 8 months, on admission to hospital showed severe rickets and a scorbutic rosary, although, except for a few purpuric spots, no other clinical signs of scurvy were present. The spleen reached to below the level of the umbilicus and was firm to the touch. The liver was enlarged, and there was some slight enlargement of the lymph nodes and severe anæmia. The blood film showed every known variety of red and white cell; a reticulocytosis of 9 per cent.; 15 normoblasts and 9 megaloblasts per 100 white cells; and 15 per cent. of the leucocytes were immature granular cells. There was extreme anisocytosis, and the fragility of the red cells was normal. The blood picture, in fact, was typical of von Jaksch's anæmia. Urobilin and urobilinogen were present in the urine, and the blood gave a positive indirect van den Bergh reaction. The administration of adequate vitamins and iron produced a continuous increase in weight and healing of the bones, and after ten weeks the spleen was only just palpable and the blood count was essentially normal. The reticulocytosis persisted for weeks, at one time reaching 12 per cent., and seven weeks after admission to hospital was still 2·8 per cent.

It could be argued that this child had a deficiency anæmia, but in my opinion the anæmia was hæmolytic, because (1) the reticulocytosis was higher and more sustained than is the case when the missing factors are supplied in the deficiency anæmias of childhood; (2) the splenomegaly was greater than I have ever observed in deficiency anæmia; and (3) there was an excess of urobilin and urobilinogen in the urine and an indirect van den Bergh reaction in the blood.

The von Jaksch's picture may occur during the course of icterus gravis; in young children suffering from subacute hæmolytic anæmia; and we have also observed it in infants, in whom the period of onset was more prolonged and the duration of the anæmia greater than is the case in subacute hæmolytic anæmia. Indeed, except for the duration of the illness and possibly the greater degree of erythroblastæmia, there was really nothing to differentiate the last group of children from those suffering from other forms of hæmolytic anæmia.

We have come to the conclusion that von Jaksch's anæmia is not a type of anæmia but a blood picture which occurs in erythronoclastic anæmia, probably only during the deficiency age period.

On rare occasions we have met with infants who have exhibited the blood picture and clinical signs of von Jaksch's anæmia but who, in spite of repeated transfusions, have pursued a downhill and fatal course. One such child presented the typical features of the syndrome when four months old but, in view of her age, was regarded as a hæmolytic anæmia of the neonatal period; since, however, she lived to the age of eight months, the diagnosis was changed to von Jaksch's anæmia. This patient proved interesting from several points of view and furnished important evidence in support of the hæmolytic nature of von Jaksch's anæmia.

In the first place, her male cousin (father's brother's child) is now under observation suffering from recurrent hæmolytic anæmia, jaundice, and splenomegaly. He, also, when first seen at the age of three months, was thought to be a hæmolytic anæmia of the neonatal period, and at that time the fragility of his red cells and the Price-Jones curve were normal; since then he has had repeated hæmolytic crises, the red-cell fragility has increased, and the Price-Jones curves have gradually become typical of acholuric jaundice.

Secondly, radiograms showed thinning of the cortex and rarefaction of the long bones and slight thickening with slight spicule formation of the frontal bones, which were found at autopsy to be due to an increase of marrow.

Thirdly, post-mortem examination revealed extramedullary erythropoiesis; predominance of normoblasts in the marrow; and widespread reticuloendothelial activity, which was characterised by swelling and proliferation of the reticulum and endothelial cells and by phagocytosis of red cells by histiocytes.

REACTIVE RETICULOSIS

The reticular reaction varies in degree according to the chronicity of the anæmia. Thus, another child showed an acute hæmolytic anæmia (due probably to infection) which proved fatal within three weeks of his admission to hospital. This child had an enlarged spleen, slight enlargement of the lymph nodes, and ecchymoses on the legs, and was waxy pale but not jaundiced. His blood showed leucopenia, agranulocytosis, thrombocytopenia, and a severe orthochromic anæmia—a true aplastic picture. Later it showed a small increase in all the counts, a reticulocytosis of 6 per cent., and slight erythroblastæmia—a picture which could be accepted as the von Jaksch's type. The improvement, however, was not maintained, and an aplastic state again supervened. At autopsy the outstanding features were the production of histiocytes with resulting erythrophagocytosis and the proliferation of reticular and endothelial cells.

An example of the chronic form was furnished by a child who, when first seen, had splenomegaly, a slight icteric tinge, and a few normoblasts in the film and was tentatively diagnosed as a case of von Jaksch's anæmia, but shortly afterwards an aplastic blood picture developed. During the subsequent course of his illness—a period of two years—he had many hæmorrhages and received numerous transfusions. At the autopsy an enormous increase

of reticulum cells and of reticulin argyrophil fibrils in the spleen, lymph glands, and bone-marrow was found. This change was, in my opinion, consequent upon chronic erythronoclasis and the end-result of the process described in the other two cases, the aplastic anæmia being the result of this cell proliferation and fibril formation in the marrow.

These cases, which were originally described by my colleague, the late Robert Gittins (1933), as examples of reactive reticulo-endotheliosis, have recently been discussed by Robb-Smith (1937), according to whom the most acute case is an example of "undifferentiated medullary reticulosis." He maintains that, although there was evidence of erythrophagocytosis in this case, there was none of hæmolysis, and that it is simpler to explain the anæmia as due to a primary abnormal activity of the histiocytes than to regard the activity of the histiocytes as secondary to erythronoclasis. Robb-Smith defines "undifferentiated medullary reticulosis" as an affection of the undifferentiated reticulum cells in the medulla of the lymph nodes, spleen, periportal tissue, and reticular tissue of the bone-marrow, and possibly also of interstitial tissue throughout the body. This condition presents, he says, a fairly characteristic clinical picture—namely, an acute pyrexial and fatal illness, the average duration of which is six weeks, occurring in children between the ages of 2 and 21 months, in whom there is enlargement of liver, spleen, and lymph glands; sometimes skeletal defects; often infection in the ears, throat, or lungs; and usually a hypochromic anæmia with a slight polymorphonuclear leucocytosis or sometimes lymphocytosis and neutropenia. Some twelve cases of this condition have been described under the various titles of aleukæmic reticulosis (Letterer), reticulo-endotheliosis (Siwe), acute reticulosis of infants (Oberling), and Letterer-Siwe's disease (Abt and Denenholz 1936), and it is usually regarded as a systematised response to an infection.

I find it difficult to accept Robb-Smith's view that in our case the anæmia was secondary to a primary reticulosis, although the difference between us may not be great if we agree, as we appear to do, that the illness was due to the effect of infection on the bone-marrow. When I first saw this child I was convinced that he was suffering from an acute hæmolytic anæmia, and it was only after pathological examination that his illness was regarded as a reactive reticulosis. The evidence in favour of hæmolysis includes the clinical picture, the blood picture, and an indirect van den Bergh reaction. An interesting commentary on this discussion is that the most chronic of our cases, which Robb-Smith states is not an example of undifferentiated medullary reticulosis, has been classed with that group by Abt and Denenholz (1936). Finally, none of our cases had skeletal defects.

It would seem then that these cases link hæmolytic anæmia of the von Jaksch's type with undifferentiated medullary reticulosis. The main difference between the two groups seems to me to be the order of their development; thus in our cases I have pictured reticulosis as reactive to, and following on, hæmolysis, whereas in other forms of reticulosis the anæmia is secondary to the reticulosis either as the result of erythrophagocytosis or is of the myelophthisic variety, as in the storage and hæmic reticuloses.

ACHOLURIC JAUNDICE OR CHRONIC HÆMOLYTIC ANÆMIA

The most important of the chronic forms of hæmolytic anæmia is acholuric jaundice, which is so well known that I propose only to emphasise certain points to illustrate the connexion between it and other forms of hæmolytic anæmia. First, I have traced the connexion between acholuric jaundice in one child and the von Jaksch's type of anæmia associated with a reactive reticulosis in his cousin; I have also pointed out that this child developed the picture of acholuric jaundice from a typical hæmolytic anæmia of the later neonatal period while under observation. Secondly, spherocytosis and microcytosis are characteristic of acholuric jaundice, whereas macrocytosis and microcytosis occur in the more acute hæmolytic anæmias; sometimes, however, macrocytes are present in acholuric jaundice, especially in exacerbations, and possibly the spherocytosis is a reaction to abnormalities of the serum. Thirdly, the fragility of the red cells is usually increased in acholuric jaundice and normal in acute hæmolytic anæmia, but there are exceptions to both statements. Fourthly, bone changes, in the form of thickening of the parietal bones and to a lesser extent of the frontals and rarefaction of the long bones, are sometimes found in acholuric jaundice; finally, sometimes advanced erythroblastæmia occurs in acholuric jaundice.

SICKLE-CELL ANÆMIA

Sicklæmia occurs mainly in negroes and is so called because many of the red cells are sickle- or crescent-shaped. This sickling is greatly increased if the blood is exposed to carbon dioxide; sometimes anæmia develops in sicklæmia, and, if so, it is usually in childhood, its onset being insidious and often associated with a history of recurrent attacks of weakness, fatigue, abdominal pain, or pains in the limbs. These recurrent attacks are due to hæmolytic crises characterised by conspicuous reticulocytosis, a moderate or sometimes a marked degree of erythroblastæmia, and an excess of urobilin in the urine and of bilirubin in the blood. The liver is often enlarged, and splenomegaly, especially after crises, is the rule in children but is rare after puberty. There may also be enlargement of the lymph nodes. The sclerotics have a greenish icteric tint, and rarely ulcers on the lower third of the leg may be found. Sickle-cell anæmia is a more severe illness than acholuric jaundice, and, if it has lasted a long time, it is rare to find normal growth and development. The most prominent symptoms are weakness, dyspnœa, and palpitation. The degree of anæmia is variable, and, should the child survive to adult life, the crises are said to become less frequent. The fragility of the red cells is less than normal. Splenectomy does not cure the disease and has produced improvement only in some cases where the spleen was greatly enlarged.

Changes in the bones, which include thickening and sometimes striation of the parietals and frontals, are greater and more frequent than in acholuric jaundice and constitute an important symptom in linking this disease with Cooley's anæmia. Two other points of interest in sickle-cell anæmia are that after puberty the spleen seems to atrophy and that osteosclerotic changes in the long bones have been found in adults.

The hæmolytic nature of sickle-cell anæmia cannot be denied, nor can its likeness to acholuric jaundice, as witness the presence of abnormal red cells, hæmolytic crises, leg ulcers, and bone changes.

COOLEY'S ANÆMIA

Cooley has rescued from the rag-bag of von Jaksch's anæmia a form which he has called

erythroblastic anæmia and which has familial and racial tendencies, being limited almost entirely to children of Syrian, Italian, and Greek stock, and has therefore been given the alternative titles of Mediterranean anæmia and Thalassæmia. Commencing insidiously in infancy it runs a chronic progressive course to a fatal termination. The presenting symptoms may be pallor, a large abdomen, or weakness; these manifestations increase and are followed by evidence of cardiac insufficiency and often great retardation of physical development. When the disease is fully developed, changes in the bones of the skull and face produce a mongoloid appearance with slight exophthalmos which is said to be characteristic, but which I do not find easy to recognise in photographs. The spleen is usually greatly enlarged, and the liver and lymph glands may also be enlarged; the skin is pale and yellowish, and sometimes the sclerotics show a slight icteric tint. The anæmia may be of moderate or severe degree. The red cells show much variation in size but less in shape, and nucleated red cells, including megaloblasts, are present in unusual numbers; polychromasia and reticulocytosis are conspicuous; the colour-index is usually low; the fragility is normal, and a leucocytosis of about 20,000 per c.mm., including immature granular cells, is usually present. According to Cooley (1936) the red cells in this condition and in sickle-cell anæmia have special characteristics, being unusually large and having an unequal distribution of hæmoglobin and an abnormality of the stroma. Platelets are normal or increased. The blood-serum gives an indirect van den Bergh reaction, and urobilin and urobilinogen may be present in the urine. Splenectomy has no effect on the disease except to cause a large and prolonged outpouring of nucleated red blood-cells. Hæmolytic crises do not occur, and pathologically there is noticeable extramedullary hæmopoiesis.

The bone changes are among the most interesting features. In the earlier stages the cranial bones are thickened, having a mottled and spongy appearance, and in the latter stages show a striking vertical striation like calcified hairs standing on end, and often complete absence of the outer table. Cooley maintains that the first change is due to marrow hyperplasia, whereas the striation indicates the replacement of exhausted marrow by new bone—i.e., an osteosclerosis. In the long bones the cortex is thin and transparent and the medulla shows abnormal reticulation, and the ilia and scapulæ show a conspicuous fan-like striation.

CHRONIC HÆMOLYTIC ANÆMIA INTERMEDIATE BETWEEN SICKLE-CELL AND COOLEY'S ANÆMIA

I now want to refer to a form of chronic hæmolytic anæmia which shows affinities to sickle-cell anæmia and to Cooley's anæmia. This case, of which a description was given by Smallwood and myself to the British Pædiatric Association in 1935, is, in my experience, unique.

The patient came under observation four years ago, when he was 7 years old. He had been in his normal health until fourteen days before he was brought to hospital; he then vomited for one day and afterwards became increasingly pale. On admission he had a temperature of 100° F. and was extremely pale, the skin having a slightly yellow tinge, but jaundice was not present. The spleen was firm and reached to four fingers-breadth below the costal margin and the lymph nodes were enlarged. The red blood-cells numbered 2,200,000 and leucocytes 7200 per c.mm., the latter showing slight immaturity of the granular cells; hæmoglobin was 23 per cent., and there were 5 normoblasts per 100 white cells and a reticulocytosis of 6 per cent. The red cells showed diminished fragility, anisocytosis, and an extreme degree of poikilocytosis, many cells being oat-shaped and having filamentous tails, but a few were typical sickle-cells. The sickling was not increased by saturation with carbon dioxide. The blood showed an indirect van den Bergh reaction, and urobilin and urobilinogen were present in the urine. A Wassermann reaction was negative. There were pronounced bone changes, hypercalcæmia, and a low blood phosphorus. A series of blood transfusions were given, and during the four months he remained in hospital the red cells increased in number but showed little change in appearance, and the hæmoglobin rose to 50 per cent. During the whole of this time there was a reticulocytosis varying from 3 to 12 per cent., and normoblasts were also usually present.

A diagnosis of hæmolytic anæmia was made, but in view of the bone changes and sickling the possibility both of Cooley's and of sickle-cell anæmia was considered. His facial appearance was as mongoloid as many of the pictures of children suffering from Cooley's anæmia, and the skull bones showed the earlier changes of that disease, but even now, four years later, there is no evidence of the characteristic spicule formation. The parents were carefully questioned on many occasions but stoutly denied the possibility of negro ancestry, which was strong evidence against sickle-cell anæmia. The day after one of these inquisitions they returned shamefacedly and said they had thought seriously over the questions which they had been asked and felt they ought to tell us something about the child's ancestry which previously they had hesitated to confess—"one of his grandparents was a Scotsman."

Having arrived at this impasse we collected the opinions of anthropologists, and I will give extracts from their letters. The first consulted was Prof. R. D. Lockhart, the recently appointed regius professor of anatomy at Aberdeen. He wrote: "I think it might be worth your while to come to an accurate opinion as to what the parents actually mean by a 'Scotsman.' Are you sure they have not availed themselves of a poetic licence for New Caledonia in place of 'O Caledonia! stern and wild, Meet nurse for a poetic child'? Personally, reviewing the case generally, I have the hunch that the Scotsman must have travelled far." Nevertheless Prof. Lockhart submitted a series of the boy's measurements to Miss R. M. Fleming, who has made a special study of children of mixed English and negro parents. Her opinion was: "from the photograph I should judge him to be of F2, with one black (negro or Malay) in the ancestry (it might possibly be a Portuguese negro)—whence an oily wave instead of a tight curl." Dr. Martha Wollstein, late pathologist to the Babies Hospital in New York, thought that "the photograph does make the boy's face appear negroid in type, but his blood is not, I think, actively or latently negroid (sickled)." With those expressions we must leave the question of his ancestry!

This boy has been kept under observation for four years and, with one striking exception, his blood has never shown any substantial change. The hæmoglobin has varied between 43 and 60 per cent. and the red cells from 2,600,000 to 4,700,000 per c.mm., but there has not been any crisis such as that which occurred when he was first seen. Reticulocytosis has always been present and varied from 3 to 21 per cent. The striking change is the development of erythroblastæmia after splenectomy. Five months after the operation the red cells numbered 2,600,000, per c.mm., of which 34,660 were nucleated reds; seven months later still the number was 3,740,000 per c.mm., of which 20,800 were nucleated reds. This great increase in erythroblasts in the blood after splenectomy exactly parallels what occurs in Cooley's anæmia. The van den Bergh test has always given an indirect reaction. The blood calcium became normal after his first month in hospital, and on four of the seven occasions in which it has been estimated

there has been a negative calcium balance. The boy has never been jaundiced, although he has always had a slightly yellow colour, and in spite of his anæmia he is not dyspnœic; indeed, he is an active, well grown, and mischievous youth.

In our opinion this child suffers from chronic hæmolytic anæmia and forms a connecting link between sickle-cell anæmia, Cooley's anæmia, and other chronic hæmolytic anæmias. He approximates to Cooley's anæmia in his appearance, absence of hæmolytic crises, bone changes, and erythroblastæmia after splenectomy; to sickle-cell anæmia in the presence of sickle-cells, bone changes, and doubtful negroid characteristics; and the hæmolytic character of the anæmia is obvious from the details which I have given. I would submit that the existence of such a case is strong evidence in favour of the hæmolytic nature of Cooley's anæmia, although I am prepared to admit that the persistent erythroblastæmia in Cooley's anæmia may be due to interference with maturation of the red cells, as suggested by Josephs (1938), but this is, I believe, the result of the long-continued drain on the red-cell factory as a result of persistent hæmolysis.

If acholuric jaundice (admitted by everyone to be hæmolytic), sickle-cell anæmia, Cooley's anæmia, and the child I have just discussed be considered together, there will be seen a certain gradation in some of the symptoms. For instance, whereas erythroblastæmia in acholuric jaundice occurs chiefly in infancy and after crises, it is more severe in sickle-cell and still more so in Cooley's anæmia; again, although the disability produced by acholuric jaundice may not materially shorten life, it certainly is shortened in sickle-cell anæmia, and children suffering from Cooley's anæmia rarely survive puberty. Furthermore, "crises" are moderately frequent in acholuric jaundice, more so in sickle-cell anæmia, but only one was observed in our case, and they are absent in Cooley's anæmia. Finally, bone changes which are slight in acholuric jaundice are greater in sickle-cell anæmia, more obvious still in our patient, and reach their maximum in Cooley's anæmia.

I have now completed my review, and, although future work may invalidate many of my suggestions, I hope that I have earned your approbation of my thesis that the varieties of hæmolytic anæmia, and certain other allied conditions to which I have referred, owe their clinical characters to permutations and combinations of the erythronic response to an injury; further, that fresh combinations may be expected to crop up from time to time, and that it is incorrect to regard the various forms described by different authors as hard and fast types and to designate them as separate diseases.

REFERENCES

Abt, A. F., and Denenholz, E. J. (1936) *Amer. J. Dis. Child.* **51**, 499.

Castle, W. B., and Minot, G. R. (1936) Pathological Physiology and Clinical Description of the Anæmias, New York.

Cooley, T. B. (1936) *Amer. J. Dis. Child.* **52**, 491.

Dacie, J. V., Israëls, M. C. G., and Wilkinson, J. W. (1938) *Lancet*, **1**, 479.

Dameshek, W., and Schwartz, S. O. (1938) *J. clin. Invest.* **17**, 501.

Gittins, R. (1933) *Arch. Dis. Childh.* **8**, 367.

von Jaksch, R. (1889) *Wien. klin. Wschr.* **2**, 435.

— (1890) *Prag. med. Wschr.* **15**, 387.

Josephs, H. W. (1938) *Bull. Johns Hopk. Hosp.* **62**, 25, 53, and 70.

Lancet (1938) **1**, 504.

Luzet, C. (1891) Etude sur les anémies de la première enfance et sur l'anémie infantile pseudo-leucémique, Paris.

Rhoads, C. P., and Miller, D. K. (1937) quoted in *Lancet*, **2**, 1323.

Robb-Smith, A. H. T. (1937) M.D. Thesis, London University.

LATE RESULTS IN DIVERTICULITIS

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THE first really comprehensive and detailed description of diverticulitis was made by the late Dr. Maxwell Telling of Leeds, who published his paper in THE LANCET in 1908. At that time I was studying the condition and collecting all available data for the Jacksonian prize essay, and I had collected 74 cases from various sources, mostly hospital records; of these patients 51 had died as a direct result of the condition, and 33 of them had died without operation. Very little was then known about the condition, but since that time our knowledge has greatly increased. Diverticulitis is now a well-known lesion of the large bowel; and, since it has become known that the condition is readily diagnosable by X rays, the number of patients presenting themselves for treatment is increasing.

I have recently studied the after-results of these cases of diverticulitis to see if it is possible to ascertain their ultimate fate in relation to the treatment adopted, for hitherto very little has been published on this subject. Many of the patients in this series have now been kept under observation for many years. The principal value of such an analysis is in evaluating the different methods of treatment and comparing the results, but it must be realised that a surgeon tends to see the more advanced cases, and for that reason the results here recorded cannot be taken as typical of diverticulitis as a whole. Sir Edmund Spriggs of Ruthin Castle sees the less severe type of case, and his experience should conform more closely than mine with what the general practitioner may expect in practice. My cases show what may be looked for in the more serious type of case, most of whom require some form of operation. Sir Edmund Spriggs informs me that 25 out of 152 patients coming under his care required operation, that is about one-sixth of the total, whereas in my series the proportion is nearly three-quarters.

ANALYSIS OF RESULTS

In this series there are 136 cases; the average age was sixty, and there were 81 males and 55 females. The great majority showed a severe inflammation of the colon with tumour, tenderness, pain, and temperature during the attacks; in many cases there was abscess, obstruction, or perforation of the colon or bladder.

Of the 136 patients 91 were treated by operation of some kind or another and 45 without operation. The latter suffered from the less severe type of diverticulitis and were treated with frequent doses of liquid petroleum to keep the contents of the colon liquid. Many of them had further attacks; but, when they were careful to stick to the régime, the attacks usually ceased, and the patients remained in good health for long periods. Nevertheless, 2 of them died subsequently from the condition: one from sepsis and the other from a sudden perforation and acute peritonitis. Both of them had refused operation.

Many of the patients who were not treated by operation have been kept under observation for many years and examined by X rays and a barium enema at yearly intervals. It has been observed that, although by keeping strictly to the petroleum régime

the patients have remained completely free from symptoms, in all cases the diverticula have increased both in size and number. Small diverticula have become large, and fresh diverticula have appeared in previously free areas of the colon. This is an important observation, for it shows that the weakness of the musculature of the bowel wall and the tendency to herniation of the mucous membrane once started cannot be arrested.

In the whole series of 136 cases there were 15 deaths directly attributable to diverticulitis, a mortality of a little over 10 per cent.

In 13 cases the abdomen was opened and, after the adhesions between the affected part of the colon and other structures had been freed, the bowel was wrapped in omentum sewn into place with fine catgut stitches and displaced into the left side of the false pelvis. This method appears to have given most satisfactory results. The patients were saved a colostomy opening and have all remained in good health for periods of six to fifteen years after operation. Three had occasional attacks of pain and tenderness during the first two years but after that no symptoms at all. One patient so treated developed an endocarditis eight years later but is still alive.

Colostomy, usually a transverse colostomy, was performed in 38 cases. Of these patients 4 died, but they were desperately ill with sepsis, peritonitis, or perforation into the bladder before operation. The remaining 34 survived for long periods and have remained free from symptoms. There seems to be no doubt that colostomy is the safest and most satisfactory method of treating bad cases of diverticulitis, in which medical treatment will not stop repeated acute attacks or serious complications have occurred or threaten. In 4 patients treated by colostomy the opening was subsequently closed: in one patient nine years later, in another two years later, and in two one year later. The immediate results were satisfactory, there being no recurrence of the old symptoms; but the end-results were not so good: one patient died from acute obstruction of the bowel five years after, and another from septic endocarditis three years after, the closure of the colostomy. Both of these patients would have been wiser to retain their colostomies.

A total of 12 patients had perforation into the bladder and developed a vesicocolic fistula with the passage of wind and fæces "per urethram." Immediately after the perforation they developed a most acute cystitis, but after a time the bladder became extraordinarily tolerant of the gross infection. In only one of them did a fatal pyelitis develop, and that was in a patient who refused operation. Several were treated by colostomy, followed later—usually over a year later—by resection of the affected colon and closure of the vesical fistula. They did well, with the exception of the patient who developed fatal endocarditis three years after closure of the colostomy.

There were 17 cases treated by resection of the affected portion of bowel with temporary cæcostomy or colostomy. Of these, 4 died, but the remaining 13 made good recoveries and had no further symptoms referable to diverticulitis. Several of them were followed up for a number of years; they had no permanent colostomy opening and were restored to normal health. These patients are the only ones that can be considered to have been cured in the proper sense of the word. In them the affected part of the bowel was strictly limited to a few inches of colon. The mortality should not be as high as 4 deaths in 17 cases, but several of the fatal cases had perforation into the bladder and gross infection of the genito-urinary tract before operation. When the area of damaged bowel is limited, resection is certainly the ideal method of treatment and should not be unreasonably dangerous if a temporary transverse colostomy is done and the resection postponed, if possible, until a year later, when all signs of sepsis have disappeared. Resection can then be performed, and the colostomy is easily closed by destroying the spur with an enterotome after the bowel has been restored. In several cases the affected portion of colon was resected by Paul's method: it was loosened from adhesions and brought outside the abdominal wall, and the two feeding loops of colon were sutured side to side; the proximal loop was drained for a week, and then the whole mass was cut away with a diathermy knife well below skin level, and at the same time an enterotome was placed on the spur. In a fortnight from the original operation the patient was beginning to pass fæces by the rectum again, and some months later the fæcal fistula on the skin was closed by a plastic operation. This is a very safe and successful method of dealing with localised diverticulitis, but it is possible only when the affected loop of colon can be sufficiently mobilised to be drawn out of the abdominal wall, which is unfortunately not often possible.

In all, 43 patients were treated by exploratory abdominal section (apart from such operation as colostomy), and 5 of them died. These patients included several cases of acute perforation with peritonitis and cases in which abscesses outside the bowel had to be drained. These were the least satisfactory cases, and several patients had to undergo further operation either to drain the bowel or to open up other abscesses. Pericolic abscesses are particularly difficult to deal with, for there is seldom a single abscess cavity which can be drained. More often there are many small abscesses which do not communicate with each other. It is rather like trying to drain a sponge. Of all cases of acute diverticulitis brought to the surgeon those in which abscesses have formed in and round the colon wall and in the abdominal wall are the most difficult and the least satisfactory. Drainage, combined with colostomy, well above the affected area is the only possible treatment, and even then the results are poor. With earlier diagnosis and earlier operation these cases should become much less frequent. In 2 cases in this series, in which local abscesses had to be drained or sinuses had formed to the skin of the abdominal wall, carcinoma subsequently developed in one of the sinuses several years later with disastrous results.

Appendicostomy was performed in 5 cases; all these were patients who, in spite of careful medical treatment and a petroleum régime, kept getting acute attacks of diverticulitis and either refused or were very averse to colostomy. As an alternative, appendicostomy was performed, and the patients were taught how to wash the colon out daily through the appendix opening. This proved very successful; in all but one the attacks eventually stopped, and the patients have remained in good health since. In one case attacks of chronic obstruction recurred, and a transverse colostomy was made and the appendicostomy opening closed. As an alternative to colostomy, appendicostomy is well worth trying and will often prove successful.

CHRONIC SEPTIC FOCI ELSEWHERE

The liability of patients with diverticulitis to develop chronic septic foci elsewhere is very important,

and has not, I think, hitherto received much attention, though Sir Edmund Spriggs has drawn attention to it. It is very difficult to estimate the exact proportion of such cases, because the complication does not usually occur for many years, and its association with the original diverticulitis is not generally realised. Further, when a patient develops chronic arthritis or myositis, he does not as a rule return to the original surgeon but goes to someone else, not aware that diverticulitis has anything to do with the condition. I have tried to ascertain how many of the 136 patients in this series have subsequently developed disease which may reasonably be attributed to the septic focus in the colon, and, although I feel sure that many such complications have been missed, the number seems to me sufficient to show that there is a very definite connexion.

There were 7 patients who developed crippling arthritis of several joints, and 4 who developed chronic endocarditis. One had a fatal abscess in the brain, and another, after fifteen years, developed chronic septic iritis and became blind. This patient had a very acute diverticulitis with localised abscess and stricture of the pelvic colon. A transverse colostomy was performed, and she had remained in excellent health for fifteen years. Another patient developed subacute combined degeneration of the cord but got better. Thus the septic or possibly septic sequels may be classified as follows:—

Severe arthritis	7
Endocarditis	4
Septic iritis	1
Brain abscess	1
Subacute combined degeneration of cord	1
Total	14

In Sir Edmund Spriggs's series of 152 cases the results are as follows:—

Lumbago	4
Clinical arthritis	7
Neuritis and fibrositis	6
Iridocyclitis	1
Spondylitis	26
Total	44

As might be expected, owing to his better chances of observation, his percentage of such complications is much higher than in my series.

It may be objected that in none of these cases is there any direct evidence that the original diverticulitis caused the trouble, but, on the other hand, the proportion of serious cases of chronic septic foci seems to be too high to be otherwise accounted for. It is significant that none of the 13 patients successfully treated by resection in my series had any subsequent trouble of this kind.

DISCUSSION

In those cases in which an abscess or perforation has developed immediate colostomy well above the affected area is the best treatment. As a rule a transverse colostomy is to be preferred, but sometimes there may be a sufficient length of healthy pelvic colon to make it possible to do a pelvic colostomy. If the colostomy is to be closed again, or a resection of the damaged area of bowel is contemplated, it is better to give plenty of time for all inflammation to subside. A year, if possible, should be allowed to elapse before closing the colostomy or doing a resection. A colostomy gets rid of all symptoms and is certainly the safest procedure; but, in view of the fact that quite a proportion of these patients subsequently develop chronic septic complications, such as endocarditis, iritis, and arthritis, resection is well worth considering and will enable the patient to get rid of the colostomy and become normal once more. As alternatives to colostomy, freeing the adhesions and wrapping the damaged area of colon in a cuff of omentum is a safe and satisfactory procedure, and so is appendicostomy. It might be advisable to combine both procedures.

When a barium enema demonstrates a conspicuous filling defect, or when the bladder is affected, the only safe procedure is colostomy, followed later, if considered advisable, by resection. Very many cases are not suitable for resection, either because there is not sufficient healthy bowel available for a resection, or because so many structures are involved in the fibrous mass that the operation for its removal would be unreasonably dangerous.

The figures given here are not sufficient to establish beyond doubt the suggestion that chronic septic complications, often serious, such as crippling arthritis, iritis, endocarditis, and even central nervous lesions, may ensue when a mass of chronically inflamed tissue due to diverticulitis has been left in the abdomen. Further investigation on this subject is required. If it should be established as a fact, it will tend to change the attitude of surgeons towards a more radical treatment of diverticulitis.

SUMMARY

(1) The after-results are analysed of 136 cases of the more serious type of diverticulitis, 91 treated by operation and 45 without.

(2) Diverticulitis is progressive in patients not operated on, but the patients can be kept free from symptoms by frequent doses of liquid petroleum.

(3) The mortality directly attributable to diverticulitis was just over 10 per cent. for the whole series.

(4) Colostomy is the safest and most satisfactory treatment for serious cases and those in which complications have occurred or threaten; 38 colostomies were performed: 4 patients died (but they were desperately ill before operation) and 34 have survived for long periods without symptoms.

(5) Of 12 patients with vesicocolic fistula only 1 developed a fatal pyelitis, and he had refused colostomy.

(6) Of 17 patients treated by resection and temporary cæcostomy or colostomy 4 died and 13 recovered and had no further symptoms. Resection is the ideal treatment when the area of affected bowel is small; the mortality in this group was raised because several of the fatal cases were complicated by vesicocolic fistula and gross infection of the genito-urinary tract before operation. Resection should be postponed, if possible, until a year or so after colostomy, when all signs of sepsis have disappeared.

(7) Of 43 patients subjected to exploratory laparotomy 5 died. These included cases of acute perforation with peritonitis and cases in which abscesses outside the bowel had to be drained. Pericolic abscesses are particularly difficult to treat, for they are very often multiple and independent. Drainage and colostomy well above the affected area is the only possible treatment. In 2 such cases carcinoma subsequently developed in a sinus.

(8) Of 5 patients treated by appendicostomy the attacks have stopped and health is good in all but 1.

(9) Chronic septic foci elsewhere developed subsequently in 14 patients. This figure, together with

Sir Edmund Spriggs's figure of 44 out of 152, suggests that the original diverticulitis was responsible, especially as none of the author's 13 patients successfully treated by resection developed such foci.

REFERENCES

Lockhart-Mummery, P. (1910) Diseases of the Colon, London.
Spriggs, E. I. (1929) *Brit. med. J.* **2**, 569.
Telling, M. (1908) *Lancet*, **1**, 843.

FLUID BALANCE IN MENIÈRE'S DISEASE

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THE object of this paper is to describe and discuss the changes in labyrinthine activity that may result from varying the salt and fluid intake of patients suffering from Menière's disease.

The descriptive term "Menière's disease" is used here (in preference to "Menière's syndrome") to denote recurrent vertigo accompanied by unilateral tinnitus and deafness of the internal ear without any other signs of disease in the central nervous system. Had the word "syndrome" been used it would have included patients suffering from these symptoms arising from a variety of causes and not essentially from an abnormal labyrinth. The condition is sometimes called "aural vertigo," and it is reasonable to suppose that the lesion responsible for the symptoms is situated in the end-organ of the eighth nerve—namely, the labyrinth.

PATHOLOGY

Menière, when he described the syndrome in 1861, thought that the symptoms were the result of a hæmorrhage within the labyrinth. It seems probable from his description that the fatal case of intralabyrinthine hæmorrhage on which he based his observations was not caused by the disease as we know it. His patient, a young woman, caught a bad cold, which she attributed to riding on the top of a coach. Soon after the onset of the cold she was seized with a severe attack of vertigo associated with vomiting, nystagmus, and deafness. The symptoms were continuous, increasingly severe, and accompanied by a fever, the patient dying on the fifth day. The autopsy revealed a normal central nervous system, and the only abnormality noted was blood-stained plastic material in the semicircular canals. The rest of the labyrinth—i.e., the vestibule and cochlea—appeared to be normal. The history of this patient in no way resembles explosive attacks of vertigo accompanied by fluctuating deafness and tinnitus which are always associated with Menière's name; nor would it seem possible for the symptoms to fluctuate if any part of the labyrinth were occupied by blood-stained plastic material. However, the importance of Menière's observations was that he drew attention to the fact that the labyrinth was responsible for the symptoms.

This disease is practically never fatal; hence in the absence of post-mortem records the pathology has been a matter for conjecture. For a long time it was felt that catarrhal conditions of the middle ear played an important part, and Scott (1929) stated that in his experience Menière's syndrome was usually associated with abnormal conditions in the middle-ear cleft.

Dederding (1929) found that stenosis of the Eustachian tube was a frequent accompaniment, and she suggested that alterations in the tension of the intralabyrinthine fluid were responsible for the typical fluctuations in labyrinthine activity.

More recently Wright (1938) has described a group of cases of aural vertigo in which there was alteration of labyrinthine function without any middle-ear changes. He felt that the condition was due to increased tension, the result of irritation from a focus of sepsis, and for it he used the term "focal labyrinthitis."

Crowe (1938) believes that stimulation of the vestibular end-organs is the cause of the vertigo, and he feels that this is the result of pressure or of chemical changes in the endolymph.

Very recently Hallpike and Cairns (1938) have demonstrated sections of the labyrinths from two fatal cases of Menière's disease in which there was clear evidence of distension of the endolymphatic spaces. Among other findings were histological changes in the region of the saccus endolymphaticus. These authors suggest that the effect of the anatomical changes may be an inability of the endolymphatic system to accommodate itself to the pressure response that results from sudden alterations in volume, combined with a more or less permanent increase of the normal intralabyrinthine tension. Dederding (1929) was the first to point out that the subjective symptoms and objective signs of patients suffering from Menière's disease were much improved and in some cases abolished by reducing the salt and fluid intake. The addition of diuretics to this régime hastened the beneficial results by encouraging the excretion of any accumulated fluid. She has suggested that patients suffering from Menière's disease have an abnormal fluid metabolism that favours a tendency to accumulate fluid within the body.

Furstenberg and his associates (1934), in a critical review of Dederding's work, suggested that the accumulation of fluid within the body could be prevented by the elimination of sodium alone from the diet, without any restriction being placed on the fluid intake. They found that they could improve the condition of patients with Menière's disease by a salt-free diet combined with the administration of ammonium chloride to favour sodium excretion, without in any way restricting the fluid intake. Similar results have been obtained by subsequent observers. Foldes (1935) and Mygind and Dederding (1937), although agreeing that sodium favours water retention, feel that for psychological as well as economic reasons it is wiser to prescribe a low-salt as opposed to a salt-free diet and to supplement this with moderate restriction of fluids combined with measures to encourage the excretion of water and sodium. Dederding (1929) mentioned that an increased fluid intake might unfavourably influence the hearing of Menière patients, but apart from this no reference to the effect of an increased salt and fluid intake has been found in the literature. It was therefore felt that it would be interesting to study the effects of an increased fluid intake with and without sodium restriction in Menière's disease. Apart from ensuring that the cases chosen conformed with the syndrome of Menière, no other selection was made.

FIG. 1

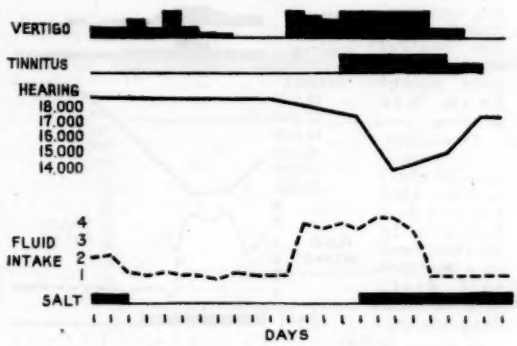
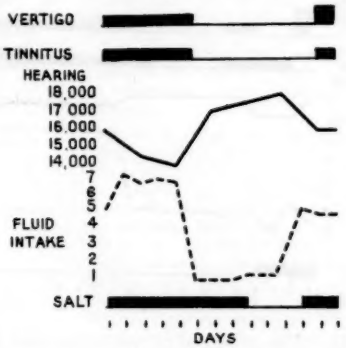


FIG. 2



METHOD OF INVESTIGATION

In a study such as this it is important to have some objective sign by which any variations in the course of the disease can be measured. Such a sign must be beyond the influence of anything but purely physical changes.

In Menière's disease it is impossible to measure objectively changes in vertigo, tinnitus, headache, and feelings of pressure; and, when changes are noted by patients, the possibility of their judgment being influenced by psychological factors cannot be ruled out. The same objection may be raised to statements about the hearing being better or the deafness more severe. Fortunately the hearing capacity both for speech and for pure tones is capable of accurate measurement; and, although such a measurement is not entirely objective, it is unlikely that psychological factors will constantly influence it to any great extent. It is generally accepted that the hearing fluctuates with the rest of the symptoms; hence better hearing accompanies a remission of symptoms, and worse hearing is experienced when the symptoms are pronounced.

The response obtained from stimulating the vestibular portion of the labyrinth is said to run parallel with the hearing capacity, and in the few patients of the present series that were so tested this was found to be true. The vestibular response to stimulation does not, in the present state of our knowledge, lend itself to accurate quantitative measurement; moreover, reproduction of the very symptoms from which the patient seeks relief may be very much resented. What is more important is the fact that vestibular stimulation in a Menière patient may let loose a variety of conditioned responses that act as a smoke-screen and mask the true nature of the vestibular response. At the present time, then, it may be said that a measurement of the hearing capacity offers the best index to the state of affairs within the labyrinth.

In the present series of consecutive cases each patient was kept in hospital during the period of the test to ensure that as far as possible the proposed régime was strictly followed and to enable the necessary daily observations to be carried out. The fluid intake and output was measured and the weight of each patient recorded daily. The hearing capacity was tested by the spoken and whispered voice, tuning-forks of differing pitches, and, for the high tones, the Struycken monochord.

It was realised that many of these patients would be suggestible and might show a false improvement symptomatically, owing to their feeling that they must be better if they were under treatment. For this reason they were merely told that to treat them it would be necessary to find out which diet suited them best, and they were encouraged to keep a diary, stating how they had felt during the day and noting any improvement or aggravation of symptoms.

The accompanying simplified diagrams have been prepared from graphs kept each day while the patients were under treatment, intake being measured in pints and hearing by monochord readings in vibrations per second; an attempt has also been made to represent a relative degree of symptoms graphically from their diaries. Vertigo and heaviness in the head appeared to occur simultaneously in most patients and are shown together, whereas tinnitus is recorded

FIG. 3

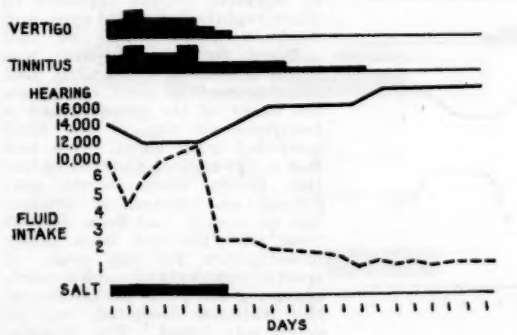


FIG. 4

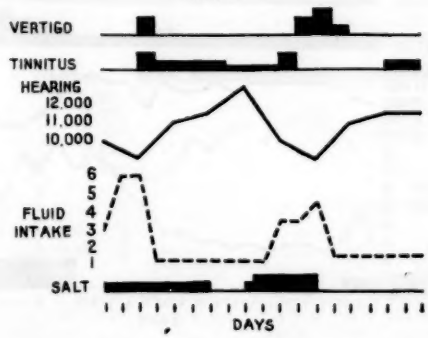
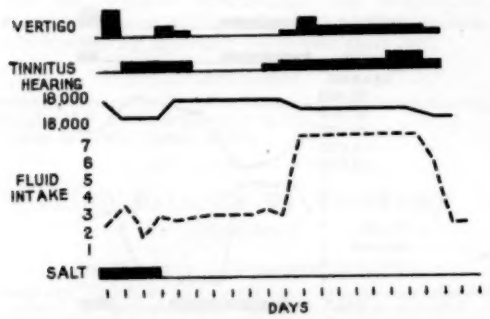


FIG. 5



separately. The presence of salt in the diet is shown diagrammatically as salt-"free" (meaning low-salt diet) and normal salt intake.

CASE RECORDS

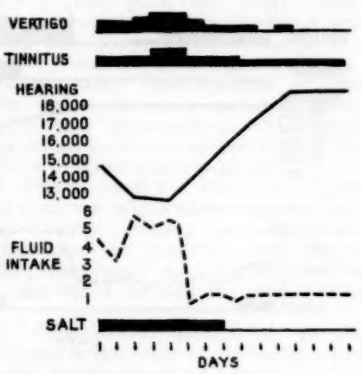
CASE 1 (Fig. 1).—A woman, aged 63, gave a history of vertigo for years, now almost constant, but with intermittent attacks of greater severity, associated with nausea, vomiting, and momentary loss of consciousness. She had occipital headaches, and objects appeared to move during an attack. Deafness and tinnitus had increased recently, both being worse in an attack, and the symptoms being more acute in the left ear. A left radical mastoid operation had been performed without benefit in June, 1933, the prevailing symptom at that time being vertigo. Apart from her aural condition no abnormality was found in her central nervous system. She was anxious about her condition and did not coöperate well when being examined, but she kept a satisfactory diary of her symptoms.

Conclusion.—Tinnitus, vertigo, and, to a lesser extent, hearing improved on a diminished fluid intake; vertigo and deafness were made worse immediately when the fluid intake was increased, but they did not appear to be greatly influenced by the amount of salt in the diet, although tinnitus returned as soon as a normal diet was taken.

CASE 2 (Fig. 2).—A man, aged 35, complained of sudden attacks of vertigo during the last year, sometimes with vomiting, associated with a heavy feeling on top of his head. These attacks were becoming more frequent, and recently he had noticed variations in hearing in his left ear, but he was uncertain of the relation of these to the attacks. Tinnitus in the left ear had become continuous. He had had no previous aural disease and was otherwise in excellent health, being a keen footballer. He coöperated well during investigations. Nothing abnormal was found in his central nervous system apart from his hearing.

Conclusion.—A typical case of aural vertigo that responded favourably to treatment on a modified salt diet, with a low fluid intake.

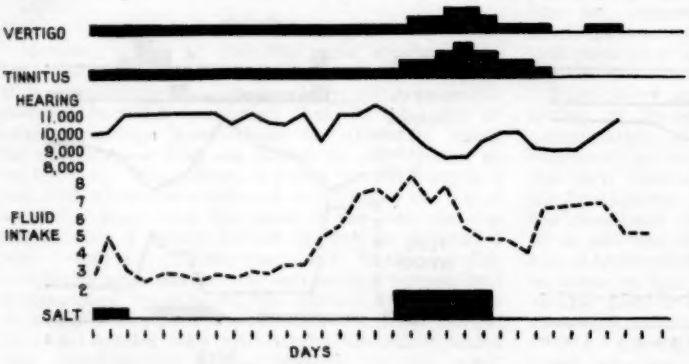
FIG. 6



CASE 3 (Fig. 3).—A woman, aged 55, for the last eighteen months had had sudden attacks of vertigo, occurring approximately at fortnightly intervals. The attacks were short, accompanied by nausea and occasionally by vomiting. Great pressure was felt on top of the head, and objects seen appeared to move rapidly in a counter-clockwise direction. No deafness had been noticed, but she complained of tinnitus in the right ear. She herself, before admission, had realised that her attacks were more frequent and prolonged if she were taking much fluid, and that she was better since she had cut this down. There was a family history of migraine. There were no abnormal signs in her central nervous system, except that her hearing was far better in the left ear than in the right.

Conclusion.—Much improvement in vertigo and tinnitus occurred on a restricted fluid intake and low salt diet.

FIG. 7

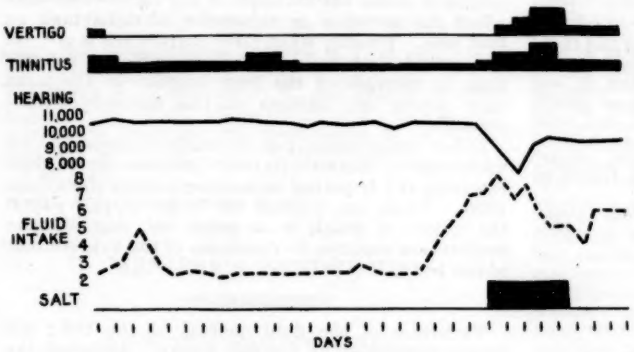


CASE 4 (Fig. 4).—A man, aged 58, had had five severe attacks of vertigo during the previous year. During the attacks he vomited, objects appeared to move rapidly before his eyes, and deafness (from which he had suffered for many years) was much increased. Tinnitus had been present in both ears since the onset of the attacks, and a heaviness on top of the head coincided with them. He had had a left radical mastoid operation fifteen years before, performed on account of vertigo, but no benefit had been derived from it. He had been under investigation for the cause of spastic paraplegia of sudden onset, occurring ten years previously, at the National Hospital, but no cause was found. The Wassermann reaction was negative.

Conclusion.—Much improvement was shown in vertigo, tinnitus, and, to a lesser degree, in hearing on a diminished fluid intake. All his symptoms became worse on increased fluid intake. The presence or absence of salt in his diet did not seem to have any noticeable effect, though his symptoms appeared to be aggravated by taking a large amount of salt.

CASE 5 (Fig. 5).—A man, aged 25, complained of sudden attacks of vertigo for the last three years, during which he would fall unless he supported himself. The room he was in appeared to move round clockwise. He had nausea but no vomiting. He became deaf in his left ear during the attacks, and tinnitus was continuous. He had been treated with Luminal since the onset, with no effect on the

FIG. 8



attacks. Nothing abnormal was found in his central nervous system.

Conclusion.—Symptomatically he was improved by a modified salt-free diet, with a diminished fluid intake. His hearing tests gave contradictory evidence only.

CASE 6 (Fig. 6).—A man, aged 63, complained of frequent attacks of vertigo, in which he was unable to stand steadily but fell backwards or to the right. He suffered from severe headaches which did not appear to be related to the attacks. During and after an attack he became deaf, and tinnitus was almost constant since the onset, the symptoms being more acute in the right ear. He had no nausea or vomiting, but he particularly emphasised the way in which objects appeared to move before his eyes in an attack. He coöperated well during investigation and was very keen to get back to the work from which these attacks had kept him. Nothing abnormal was found in his central nervous system.

Conclusion.—All symptoms were aggravated by increased fluids and improved by restriction. On discharge from hospital on a modified salt-free diet and small fluid intake his headaches were much improved, his hearing was normal, and his vertigo, though still present, was better.

CASE 7 (Fig. 7).—A man, aged 27, had had intermittent attacks of vertigo, which during the last few months had become almost constant. During a severe attack he would fall down and occasionally would vomit. His hearing was poor, but during an attack he would become "stone-deaf." Tinnitus was continuous in his left ear. He complained of troublesome headaches and a feeling of pressure on top of his head. Before admission he had tried to restrict his fluid intake but had derived no benefit from it.

Conclusion.—The symptoms did not appear to be greatly influenced by the amount of fluid taken but were improved on a salt-free diet. A normal salt intake induced a rapid increase in vertigo and tinnitus, and he became even more deaf than normally.

CASE 8 (Fig. 8).—A man, aged 48, complained of attacks of vertigo occurring about once a fortnight for the last six years, but these had been more severe for the last two years. During the attacks he would vomit and sometimes lose consciousness. Tinnitus and deafness were present in the right ear during the attacks, and a feeling of weight on top of the head followed them. Objects appeared to rotate from right to left at the onset of an attack. No abnormal signs were found in the central nervous system.

Conclusion.—Much improvement in symptoms was shown on a modified salt-free diet and low fluid intake. All the symptoms were much aggravated on a normal diet and increased fluids.

CASE 9 (Fig. 9).—A woman, aged 35, complained of attacks of vertigo for the last three years and of deafness and noises in the left ear for the last year. The attacks occurred about once a month and lasted half an hour. During an attack she would vomit, after which she experienced a feeling of bursting in the head and left ear. For five months during last year she had no attacks, her hearing improved, and the noises in her ears stopped, but recently the tinnitus had been constant. Nothing abnormal was found in her central nervous system.

Conclusion.—An improvement occurred in vertigo and tinnitus when her salt and fluid intake were cut down; but, immediately her fluid intake was increased, in spite of a low salt diet her symptoms returned, and when both salt and water were increased, she became rapidly worse. Subjectively, her deafness also reacted in this way, but monochord and tuning-fork readings were contradictory.

FIG. 9

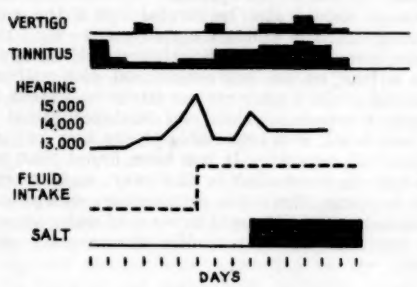
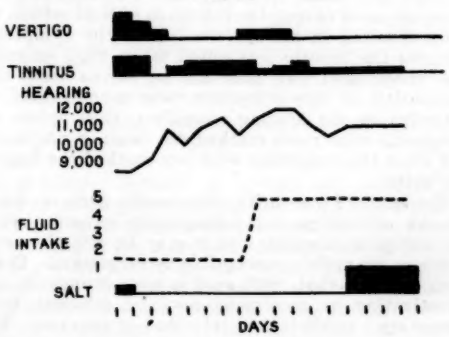


FIG. 10



CASE 10 (Fig. 10).—A woman, aged 60, complained of frequent attacks of vertigo during the past six months, associated with nausea and vomiting. She had noticed that each attack was preceded by tinnitus in the left ear and followed by deafness in that ear for some days. Nothing abnormal was found in the central nervous system. She was a difficult patient to investigate and failed to coöperate.

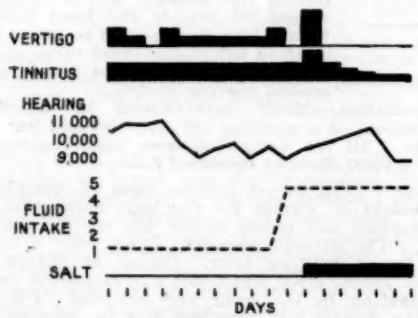
Conclusion.—Her condition did not appear to be affected by the amount of salt and fluid in the diet. Her symptoms on admission, on a normal diet, were more severe than when she was discharged, having been on increased fluid and salt for the previous four

days. Her improvement appeared rather to be due to the fact that she was "under treatment" than to be a response to a particular treatment.

CASE 11 (Fig. 11).—A woman, aged 60, had had three severe attacks of vertigo during the last year, accompanied by vomiting, a "bursting" feeling in the head, and tinnitus in the left ear. During an attack objects appeared to move to the left. She had been deaf in the right ear for some time but had noticed deafness in the left ear only with the attacks. Apart from her deafness nothing abnormal was found in the central nervous system.

Conclusion.—A sudden increase in fluid intake while still on a low salt diet brought on a severe attack, but her symptoms did not appear to be benefited by a low salt diet and diminished fluid intake or, after the one attack, to be affected by an increase in either salt or fluid.

FIG. 11



DISCUSSION

It will be seen from the foregoing results that all but one (Case 10) of the patients were affected to a greater or less degree by varying their intake of fluid and salt. In every case but that one, any steps taken to favour the retention of fluid within the body resulted in an aggravation of the symptoms, whereas the reverse was noted when fluid excretion was encouraged. In nine out of eleven cases this fluctuation of the symptoms was accompanied by variation in the hearing capacity; thus, when the symptoms were more marked the hearing was worse, and when the symptoms were less marked the hearing was better.

The sense of insecurity that results from recurrent attacks of vertigo not infrequently causes obvious psychological changes, and it may be felt that such sufferers are unduly susceptible to suggestion. It has been objected that, with such a mental outlook, any investigation or treatment may be followed by a temporary amelioration of the symptoms. This may or may not be true, but such an explanation cannot possibly account for the variations observed in cochlear activity, which are beyond the control of psychological factors.

Dederding (1929) and others suggest that Menière patients tend to retain fluid; but, as Crowe (1938) points out, the question then arises why the symptoms should disappear on division of the vestibular nerve on the affected side alone. None of the patients under review tended to retain fluid unduly, although they were all sensitive to variations in the salt and fluid intake. What, then, is the explanation of this sensitiveness? In the light of the pathological findings of Hallpike and Cairns (1938) it seems that imperfect functioning of the pressure-regulating mechanism of the endolymphatic system places the affected labyrinth under the influence of any factors that may affect the secretion or absorption of endolymph on that side. Exactly what these factors are is not yet understood, but it is not unreasonable to suppose that an increase of the fluid content of the body may favour an increase of the intralabyrinthine pressure.

Other suggestions put forward to account for variations in intralabyrinthine pressure are allergic reactions and imperfect vasomotor control (Lermoyez 1896). These are beyond the scope of this paper, the object of which is to point out that Menière patients are sensitive to variations of the fluid content of the body.

CONCLUSIONS

Variations of the fluid content of the body are largely controlled by the salt intake. Although the fluid intake need not be restricted in the presence of a minimal salt intake, such a régime may not always be easy to follow. It seems that the most convenient anti-retentional treatment would be a diet that partially restricts the fluid as well as the salt intake, with the addition, if necessary, of measures to encourage the excretion of salt and fluid. We think that the investigation of every case of Menière's disease should include a trial with an anti-retentional diet. We do not suggest that such a treatment can take the place of surgery, or that a diet can do anything more than exercise some control over the symptoms. As a form of treatment it is only palliative and can never be considered curative. If the response to anti-retentional treatment is favourable it will enable the patient to lead a normal life, or may at least afford relief to one who is a poor operative risk or assist for a time one who cannot afford to have an operation.

If the response is unfavourable or the régime is found too irksome, or if after an initial improvement relapses occur, despite strict adherence to the régime, it will be advisable to resort to the various surgical measures at present available. Surgical treatment should also be carried out if the patient is young or in a difficult employment—e.g., motor drivers, steeplejacks, and bricklayers. Even in these cases a trial on an anti-retentional diet will assist in deciding which patients are likely to benefit from surgical treatment. Until an anti-retentional diet has been tried, it is impossible to say how any given patient will respond. It has been found that many cases can be controlled in this way, and, when, as often happens, there are premonitory symptoms of an impending attack, rapid increase of water excretion may abort or at least modify the severity of the attack.

SUMMARY

(1) The existing views on the pathology of Menière's disease are examined. (2) The effect of varying the salt and fluid intake on the symptoms of 11 Menière patients is described. (3) It is suggested that the pathological process in the affected internal ear of Menière patients is responsible for their sensitiveness to variation of the salt and fluid intake. (4) It is recommended that an anti-retentional régime should form part of the investigation of every Menière patient.

We are most grateful to the colleagues of one of us (T. C.) at the National Hospital and King's College Hospital who have placed these cases at our disposal and thus made this investigation possible. We are also very grateful to Dr. R. A. McCance and Miss M.

E. Widdowson for their advice and help with the low-salt diets.

REFERENCES

Crowe, S. J. (1938) *Medicine, Baltimore*, **17**, 1.
Dederding, D. (1929) *Acta oto-laryng., Stockh.* Suppl. 10.
Foldes, E. (1935) *Amer. J. digest. Dis.* **2**, 243.
Furstenberg, A. C., Lashmet, F. H., and Lathrop, E. (1934) *Ann. Otol., &c., St. Louis*, **43**, 1035.
Hallpike, C. S., and Cairns, H. (1938) *Proc. R. Soc. Med.* **31**, 1317.
Lermoyez, M. (1896) *Ann. Mal. Oreil. Larynx*, **22**, 28.
Menière, P. (1861) *Gaz. méd. Paris*, **16**, 597.
Mygind, S. H., and Dederding, D. (1937) *Proc. R. Soc. Med.* **30**, 1485.
Scott, S. (1929) *Ibid*, Sect. Otol. **22**, 43.
Wright, A. J. (1938) *J. Laryng.* **53**, 97.

MENIÈRE'S SYNDROME

AN OBSERVATION

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In a previous paper I considered the results of an investigation into the destination of alcohol when injected into the labyrinth of the cadaver through the oval window, and gave a description of two cases so treated in the living subject (Peacock 1938). Cadaveric labyrinths were injected with a saturated solution of sodium iodide and the extent to which the semicircular canals were filled was investigated by subsequent radiography. It was pointed out that, the labyrinth being a closed cavity containing fluid and surrounded by bony walls, a given quantity of fluid could be introduced into it only at the expense of a simultaneous overflow of an equal quantity of fluid into the middle ear. A method was described whereby the labyrinthine contents could be replaced by alcohol and this overflow prevented by the use, at the time of injection, of simultaneous and balanced suction, a circulation of alcohol into the labyrinth being thus obtained. It was also found, however, that by simple injection without suction, filling of the semicircular canals was incomplete when less than 0·5 c.cm. was injected. The introduction by simple injection of so large a quantity of alcohol (0·5 c.cm.) into the labyrinth of the living subject would result in sufficient overflow into the middle ear to cause serious damage to this cavity and to the facial nerve.

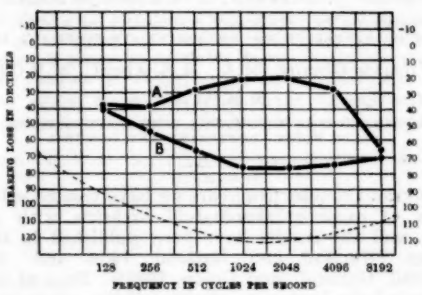
In May, 1938, Wright, at the Royal Society of Medicine, quoted a series of cases which he had treated during the last few years by simple alcoholic injection, and in which he had overcome the difficulty of overflow into the middle ear by limiting the quantity of alcohol injected to one minim. The results he obtained were satisfactory, in spite of the fact that the injected alcohol was, according to my findings on the cadaver, of insufficient quantity totally to fill the semicircular canals.

At the same meeting a paper was read by Hallpike and Cairns in which the pathological findings were described of two post-mortem examinations performed on patients who had suffered from Menière's syndrome. The most striking demonstration was given that in both cases "gross dilatation of the saccule and scala media with obliteration of the perilymph cistern and of the scala vestibuli" had occurred. In his explanation of the mechanism whereby the characteristic intermittency of the vertiginous attacks is brought about, Hallpike continues:

"In this fluid system it is clear that any volume increase in the endolymph will be met by an expansion of its thin and elastic membranes, and by the expulsion through the helicotrema and cochlear aqueduct of a corresponding volume of perilymph. The resulting pressure change in the fluid system as a whole will be equivalent to that following the injection of a fraction of a c.c. of fluid into the spinal theca, that is to say, negligible. . . . If however the endolymph system becomes fully dilated, then a very different state of affairs is brought about. The elastic membranes are everywhere brought into contact with the rigid bony walls, except at the helicotrema. At this point Reissner's membrane is stretched and bulges into the scala tympani and in this relatively limited space represents the sole area of elastic expansion which now remains. . . . It is easy to see from this that the pressure change resulting from any sudden volume increase of the fluid within the endolymph system would be very considerable, and would in fact be reproduced approximately by the injection into an already filled rigid vessel of an infinitesimal quantity of fluid. In other words, once the dilatation of the endolymph system has attained its maximal degree, then the fluid system of the membranous labyrinth, from being insensitive, becomes at once extremely sensitive in its pressure response to a given volume increase of the endolymph."

Considering together the findings of Hallpike and Wright, it appeared to me to be justifiable to perform a simple labyrinthine puncture and to refrain from injecting any alcohol at all, on the grounds of a possibility existing that previous results were obtained by the relief of endolymphatic distension, the alcoholic injection playing a part of secondary importance.

This was therefore done on a patient suffering from severe Menière's syndrome with unilateral deafness and tinnitus. Attacks of vertigo had occurred for a period of six years, and for four months previous to admission to hospital were occurring at the rate, on an average, of six a month. Subsequent to labyrinthine puncture through the oval window, cerebrospinal fluid discharged from the ear for a period of twelve days, and the period of post-operative vertigo was of longer dufation than in those cases where alcohol is used. The tinnitus was unaffected. The drum was healed and normal by the sixteenth day. The loss of hearing caused is shown in the accompanying audiometer Chart, the second reading representing the hearing present one month after labyrinthine puncture, or fourteen days after the drum had healed. Considerable loss of hearing was present before puncture, and the post-operative hearing was of no practical value. The patient remained well and free from attacks of vertigo for a period of precisely two months, at which point he had an attack of intense vertigo lasting for three days and which persisted to some extent for one week. Subsequent injection with alcohol was therefore undertaken.



A = Hearing before labyrinthine puncture
B = ,, after ,, ,,

The information to be derived from this case is largely of a negative nature, in that simple labyrinthine puncture is shown to be inadequate as a method of treatment. It is thought, however also to be of interest for the following reasons. The post-operative period of freedom from vertiginous attacks, during which period the intensity of endolymphatic distension was presumably relieved, appears to support Hallpike's suggestion as to the cause of the syndrome's intermittency, as does also the fact that this freedom was no more than temporary.

The importance of the part played by alcohol in obtaining lasting relief is confirmed, and, from the satisfactory results obtained by Wright, it appears possible that partial and total filling of the semicircular canals are subjectively equally effective.

REFERENCES

Hallpike, C. S., and Cairns, H. (1938) *Proc. R. Soc. Med.*, September, p. 1317.
Peacock, R. (1938) *Lancet*, **1**, 421.
Wright, A. J. (1938) *J. Laryng.* September, p. 594.

TREATMENT OF RHEUMATOID ARTHRITIS WITH A NEW GOLD SALT

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DURING the past five years we have treated a large series of cases of rheumatoid arthritis with gold salts, and the results have been published in three papers (Hartfall and Garland 1935 and 1936, Hartfall, Garland, and Goldie 1937). Most of these patients have been seen at the arthritis clinic of the Leeds Public Dispensary and Hospital, where the number treated with gold had reached 1200 in August, 1938. Several different gold preparations have been used, and in June, 1937, Messrs. Bayer Products Ltd. invited us to give a therapeutic trial to a new preparation which had not at that time become generally available. This product is a methyl glucamide of auro-thio-diglycollic acid, the total gold content being 50 per cent. It is put up as a 5 per cent. and a 2 per cent. oily suspension and is marketed under the trade name of Parmanil. It is intended for intramuscular injection.

We have used parmanil in the treatment of 50 cases of rheumatoid arthritis entirely unselected as regards duration of symptoms or severity but conforming to the criteria laid down in previous papers. We began to treat these patients in June, 1937, and all had completed at least one course of injections by the end of July, 1938, though perhaps many will require further treatment in the future. We shall, however, compare the results and the incidence of toxic reactions in these cases with those in similar series of patients treated with other gold salts.

* Working with the assistance of an expenses grant from the Medical Research Council.

CLINICAL ANALYSIS

Age and sex.—Of the 50 patients 36 were females and 14 males, a greater proportion of males than in our previous series. Table I shows the age-distribution at the onset of arthritis and at the beginning of treatment, and Table II shows the duration of the disease.

TABLE I—AGE-DISTRIBUTION

Age-group	Number of cases.	
	At onset of arthritis	At start of treatment
10–19	2	1
20–29	9	6
30–39	6	4
40–49	14	8
50–59	16	21
60–69	2	7
70+	1	3
Total	50	50

TABLE II—DURATION OF SYMPTOMS

Duration in years	Cases
0– 1	15
1– 2	3
2– 5	11
5–10	14
10–20	6
20+	1
Total	50

As will be seen from Table II, 21 patients had suffered from the disease for five years or more. It is of interest, however, that in the past year we have seen few new cases showing very severe disability. We shall not discuss such associated conditions as psoriasis and anæmia, for the incidence of these in no way exceeded the normal expectation.

The *blood sedimentation-rate* (B.S.R.) was measured by the Westergren method before and after treatment in all cases. Table III shows the effects of treatment on the B.S.R.

TABLE III—EFFECT OF PARMANIL ON BLOOD SEDIMENTATION-RATE

B.S.R. (millimetres)	Before treatment	After treatment
	Cases and per cent.	Cases and per cent.
0– 5	6 (12)	17 (34)
6–10	9 (18)	15 (30)
11–20	16 (32)	14 (28)
21–40	12 (24)	4 (8)
41–80	6 (12)	0
81+	1 (2)	0
Total ..	50	50

In this Table the "average hourly reading" is used—i.e., if S_1 is the sedimentation-rate in millimetres at the end of one hour and S_2 the reading at the end of the second hour, then the average hourly reading (S) is represented by the equation

$$S = \frac{S_1 + S_2}{2}$$

The Table shows a very striking fall in the B.S.R.

as a result of treatment with parmanil, a finding entirely in keeping with our previous experience.

METHOD

Parmanil is an oily suspension given intramuscularly, and it has been our practice to give weekly injections. From an initial 0·5 c.cm. of the 5 per cent. suspension (0·025 g.) the dose has been gradually increased to 2 c.cm. (0·1 g.). A course has generally consisted of twelve injections, but the dosage has been smaller than that of other gold preparations, the average amount per course being 12 c.cm. (0·6 g.) given in 11·4 injections. Of the 50 cases 19 had two courses and 31 one course.

RESULTS

The results of treatment are shown in Table IV. The results are divided into five groups, and the criteria are those laid down in previous publications. The last two columns show the results of treatment in 690 cases treated with various other preparations and previously recorded (1937).

TABLE IV—COMPARISON OF RESULTS OF TREATMENT OF RHEUMATOID ARTHRITIS WITH PARMANIL AND WITH OTHER GOLD SALTS

Result	Parmanil	Various preparations
	Cases and per cent.	Cases and per cent.
Cured	2 (4)	68 (10)
Marked improvement ..	42 (84)	392 (57)
Moderate „ ..	3 (6)	90 (13)
Slight „ ..	1 (2)	43 (6)
No improvement or worse ..	2 (4)	78 (11)
Died	0	19 (3)
Total	50	690

This Table shows that the results with parmanil are as good as, if not better than, those seen in a large series of cases treated over a long period with four different gold salts (Lopion, Solganal B oleosum, Crisalbine, and Myocrisin). As has already been stated the average dose of gold salt per course in the parmanil-treated cases was 0·6 g.; but the average amount of gold salt per course in the 690 other cases was more than 1 g., and since we have previously expressed the opinion (1937) that better results follow the use of larger doses, it is of interest to compare the results in the parmanil group with a group of cases treated with small doses of another intravenous gold salt. Table V shows a comparison between the parmanil group and a series of 27 unselected cases of rheumatoid arthritis treated with a similar small dose of lopion (average 0·59 g. per course); all these cases have been treated during the past year. For comparison, the results in 23 cases on *small* doses of another preparation for intramuscular injection are shown in the last columns.

Table V has two features of interest. First, it requires no statistical analysis to show that the results of treatment with parmanil are strikingly better than those with similar doses of lopion. Secondly, the results with small doses of lopion compare very unfavourably with the previously recorded results with large doses (1937). It appears, therefore, that the therapeutic value of parmanil is greater than that of lopion in equivalent dosage, and the effects of small doses of parmanil are as good as, or better than, those obtained with large doses of any other gold salt. So far we have no experience of parmanil in large doses.

TABLE V—COMPARISON OF RESULTS OF TREATMENT OF RHEUMATOID ARTHRITIS WITH PARMANIL AND WITH LOPION

Results	Parmanil	Lopion	Another intramuscular preparation
	Cases and per cent.	Cases and per cent.	Cases and per cent.
Cured	2 (4)	0	0
Marked improvement ..	42 (84)	11 (41)	12 (52)
Moderate „ ..	3 (6)	3 (11)	4 (17)
Slight „ ..	1 (2)	3 (11)	4 (17)
No „ ..	2 (4)	10 (37)	3 (13)
Total	50	27	23

Relapse has been seen in 6 cases; in 4 it was slight in degree and in 2 moderate. In 5 it occurred after the first course and in 1 after the second. The interval between the end of the course and the onset of relapse was less than three weeks in 2 cases; in other cases it was between eight and twelve weeks.

TOXIC REACTIONS

A comparison between toxic reactions resulting from parmanil and those in the series of 900 cases treated with various preparations, and previously published (1937), is shown in Table VI for each drug in terms of courses, the fifth line showing the reactions with parmanil and the sixth those seen when lopion was given in small dosage; this last line is added because it seems to us to be more strictly comparable than a series in which bigger doses were used. We must again emphasise that these figures refer to 29 *courses*, not cases. It has been our experience

TABLE VI—TOXIC REACTIONS IN RELATION TO DIFFERENT GOLD SALTS

Preparation	Courses	Toxic reactions: Cases			Toxic reactions: Per cent.			Total (per cent.)
		Slight	Moderate	Severe	Slight	Moderate	Severe	
Crisalbine ..	232	50	40	11	22	17	5	44
Lopion ..	815	85	97	36	10	12	4	27
Solganal ..	301	45	34	5	15	11	2	28
Myocrisin ..	67	12	13	4	18	19	6	43
Parmanil ..	69	10	4	4	14	6	6	26
Lopion (small dosage) ..	29	5	6	1	17	21	3	41

that the frequency of reactions diminishes in the second and subsequent courses, and it may be that, when multiple courses of parmanil are given, the relative incidence of reactions will diminish still further. It will be seen that the frequency of toxic reactions in the small group (29) treated with small doses of lopion is considerably higher than that in the large group (815) treated with bigger doses. The probable explanation for this is that already mentioned—namely, that the relative frequency of reactions diminishes with multiple courses; most of the large series of cases had had two or more courses.

This Table also shows that the incidence of toxic reactions in parmanil-treated patients is at least as low as that in patients treated with any other gold salt. The types of reaction corresponded more or less to those we have described in previous papers. Skin reactions, mild or moderate, were seen in twelve cases. Two patients had slight soreness of the mouth. Gastro-intestinal disturbances included two cases of colic, one slight and one moderate, and one of severe diarrhœa. Five patients developed jaundice during or after treatment, in three of whom it was severe.

SUMMARY

(1) A new gold salt, parmanil, has been used in the treatment of 50 cases of rheumatoid arthritis over a period of one year.

(2) The dosage has been approximately half that previously used with other gold preparations. The curative results have been equalled or surpassed.

(3) Toxic reactions occurred in a quarter of the cases. Parmanil is one of the least toxic of gold salts.

We wish to express our gratitude to Messrs. Bayer Products Ltd. for providing us with parmanil.

REFERENCES

Hartfall, S. J., and Garland, H. G. (1935) *Lancet*, **2**, 8.
— — (1936) *Ibid*, **1**, 1459.
— — and Goldie, W. (1937) *Ibid*, **2**, 784 and 838.

Clinical and Laboratory Notes

AGRANULOCYTIC ANGINA FOLLOWING ADMINISTRATION OF M. & B. 693

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THE following case may be of interest in view of the increasing use of 2-sulphanilyl-aminopyridine (M. & B. 693) in pneumococcal, gonococcal, and other infections.

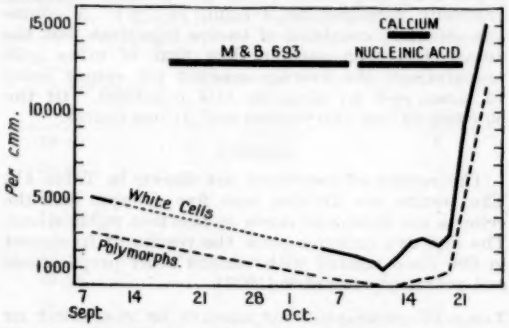
CASE RECORD

The patient, a married woman aged 42, who worked as an office cleaner, was taken ill on August 7th, 1938, six days after partaking of a meal of shell-fish. The illness began suddenly with griping abdominal pain and vomiting, which confined her to bed for three days. After this she got up but still felt depressed and suffered from continuous headache. About this time she began to have diarrhœa, which persisted until a week before her admission to hospital. On the 17th she returned to bed because of a sudden rigor, followed by aching pains in the trunk and limbs, with insomnia, headache, and mild hallucinations. Her condition did not improve at home, and on Sept. 6th she was admitted to Guy's Hospital under the care of Dr. N. Mutch.

On admission the pulse-rate was 90, and there was a moderate pyrexia of 98°–101° F. The patient was listless and complained of headache and of aching pains in the back. The abdomen generally was slightly tender, with a palpable spleen. One or two rose-spots were present. The bowels were confined. Typhoid fever was diagnosed and suitable treatment instituted. Serum agglutinations to a titre of 1 in 700 were obtained for both H and O typhoid antigens, and typhoid bacilli were later cultured from the urine.

On Sept. 8th a blood count showed the hæmoglobin percentage as 80 and the red cell count 3,530,000 per c.mm. The total white cell count was 5000 per c.mm., of which 3000 per c.mm. were polymorphs.

The clinical condition remained much the same until the 18th, when the left leg became swollen and painful, with thrombosis of the femoral and popliteal veins. On the 20th a course of M. & B. 693 was started, 3 g. being administered daily (2 tablets



White cell and polymorphonuclear counts during illness.

of 0·5 g. each three times a day). The drug was continued until Oct. 7th, making a total dosage of 54 g. It was then discontinued because the patient complained of a slight sore-throat and because of a rigor in the evening. On the next day the temperature, which had been about 100° F., began to rise to 103° F., and the angina was worse. There was considerable inflammation of the fauces, with a whitish exudate on the right tonsil, and cervical adenitis. The blood showed a total white cell count of 1800 per c.mm., with only 70 polymorphs per c.mm. Agranulocytic angina was diagnosed, and 1 c.cm. of a 5 per cent. solution of nucleinic acid was administered intramuscularly, a similar dose being given every twelve hours until Oct. 21st.

At first the condition did not improve, and on the 11th the throat was slightly worse, the temperature 104° F., and the total leucocyte count 1300 per c.mm., of which 25 per c.mm. were polymorphs. The next day the white cells numbered 100, and no polymorphs at all could be seen. Intravenous administration of Calcium Sandoz, 20 c.cm. daily, was now begun. On the 13th the total white count was still only 1600, no polymorphs being seen, but by the next day the count had risen slightly to 2450, with 195 polymorphs. On the 15th the patient was much improved, the temperature coming down to 99° F. and the throat appearing much better. The white cells numbered 2700, with 325 polymorphs, nearly all of which were immature. Progress was maintained, and on the 17th the total count was 2200, with 460 polymorphs. The next day there were 960 polymorphs in a white cell count of 3000, and the throat appeared almost normal. Administration of calcium was discontinued at this point. Three days later an infected premolar root had to be removed because of the development of an alveolar abscess. The total white count had by then risen to 9600 per c.mm., of which 5470 were polymorphs.

The progress of the case was further interrupted on the 23rd by thrombosis of the femoral vein on the right side. Blood examination now showed 15,000 white cells per c.mm., with 11,250 polymorphs. Since then gradual clinical improvement has taken place, and there has been no further tendency to leucopenia. The left leg is still somewhat swollen and tender, but the right leg is normal, and there has been no pyrexia for several weeks.

DISCUSSION

It is well known that typhoid fever may produce a considerable leucopenia, though actual agranulocytosis is a rarity. Such a case of agranulocytic

angina complicating typhoid was reported by Blackie (1934), and possibly this case may be similar. But it is a singular coincidence that in our patient the agranulocytosis did not appear until immediately after the administration of M. & B. 693, although the typhoid fever had been present for six weeks before its administration. No other drugs known to produce agranulocytosis had been exhibited. It seems likely, therefore, that the granulopenia was due mainly to the M. & B. 693, although the original typhoid infection may have been a contributory factor. The total dosage of the drug (54 g.) was fairly high and was evidently, in the light of subsequent events, too great. It was, however, no higher than that given by some other workers—Lloyd, Erskine, and Johnson (1938) were accustomed to administer to some patients courses of 52 g., and one or two of the patients treated by Evans and Gaisford (1938) received nearly 50 g. The present case is therefore somewhat unusual and it does not necessarily follow that M. & B. 693 will cause agranulocytosis when exhibited in smaller dosage or in other infections which do not in themselves cause a fall in the white cell count.

We have been unable to find any record of agranulocytosis following the administration of M. & B. 693, although the condition has been reported on several occasions following the use of sulphanilamide.[1] Whitby (1938) states that, in his experience and in that of others, no serious toxic effects other than those of cyanosis, nausea, and vomiting have been observed. Evans and Gaisford (1938), in 100 cases of lobar pneumonia treated with M. & B. 693, did not encounter any severe leucopenia, and several other writers have used the drug without observing such an effect. The manufacturers claim that, so far as is known, the drug is without effect on erythropoiesis or leucopoiesis. Lloyd, Erskine, and Johnson (1938) however, in treating gonorrhœa with M. & B. 693, noted that a small proportion of cases showed a slight but definite depression of the total white cell count with polymorphonuclear leucopenia and a relative lymphocytosis. They sound a note of warning on this point, and it is our purpose in reporting the present case to emphasise this warning and to demonstrate that 2-sulphanilyl-aminopyridine, though apparently less toxic than sulphanilamide, is still, in certain circumstances, not without danger to the leucopoietic system.

We are indebted to Dr. N. Mutch for permission to publish this case.

REFERENCES

Blackie, W. K. (1934) *Lancet*, **2**, 355.
Evans, G. M., and Gaisford, W. F. (1938) *Ibid*, July 2nd, p. 14.
Lloyd, V. E., Erskine, D., and Johnson, A. G. (1938) *Ibid*, Nov. 19th, p. 1160.
Whitby, L. (1938) *Ibid*, Nov. 12th, p. 1095.

CASE OF ASSOCIATED RUPTURE OF LUNG AND SPLEEN

By G. J. Cunningham, M.D. Lond.
SENIOR ASSISTANT PATHOLOGIST, ROYAL SUSSEX COUNTY HOSPITAL, BRIGHTON

A boy, aged 14, was wheeling a bicycle when a motor lorry collided with him. The lorry struck the bicycle and caused the boy to fall on to the edge of the kerb. He sustained severe abrasions of the left hip and a few slight scratches on the left side of the face and lower part of the right side of the chest. It was thought that the left-sided injuries were caused by his impact with the kerb and those on the right by the bicycle falling on top of him. He was taken to hospital, where he was seen to be restless and irritable. No alteration in reflexes was observed, but the left pupil was found to be larger than the right. Some blood was seen in the pharynx, and the case was provisionally diagnosed as fractured base of skull. The patient, however, suddenly became worse and died within half an hour of his coming to hospital.

Post-mortem report.—The external injuries noted above were confirmed. There was some bruising of the subcutaneous tissues behind the right ear, but no fracture of the skull was present, and the brain was normal. The left side of the neck had some bruising in the deeper parts. The pleural cavities contained no adhesions, but about 1½ pints of blood were found on the left side, and this was accounted for by a laceration of the left lung. The visceral pleura was torn and the lower lobe almost divided into two parts. Bruising was seen in the left parietal pleura, and the diaphragm in the neighbourhood showed a similar condition. The right lung was normal, and no fracture of the ribs could be found on either side. The peritoneal cavity contained about a pint of blood, which had issued from a rupture of the spleen, there being two separate lacerations. The left kidney was normal, but some hæmorrhage was discovered in the connective tissue surrounding it.

The main points of interest in this case are as follows:—

(1) The association of rupture of the lung and spleen, both apparently caused by the same blow. It is stated that the injury most likely to produce rupture of the spleen is a fall on to a projecting ledge, as in this instance.

(2) The patient was young, as in nearly all similar cases. This case would therefore fit in with Cooke's suggestion[1] that the following factors are necessary for lung rupture: resilient ribs, a fully expanded lung, a closed glottis, and a sudden impact. With the lung expanded and the glottis closed the diaphragm would be fixed and thus suitable to transmit the force of the blow from abdomen to chest.

(3) There were misleading signs. (*a*) Blood in the pharynx is usually attributed to a fracture of the posterior cranial fossa. In this case it was coughed up although there was no history of an actual hæmoptysis. (*b*) Pupillary changes were seen, probably due to stimulation of the cervical sympathetic nerve by bruising in the neck.

[1] Since writing this we have read a letter from Dr. F. D. Johnston (*Lancet*, Nov. 19th, 1938, p. 1200) in which he describes a fatal case of agranulocytosis following the administration of M. & B. 693 for streptococcal septicæmia. The total dosage of the drug was the same as in our case (54 g.), but it was spread over only 11 days as compared with our 18 days.

STAINING OF VAGINAL SMEARS

By Hans H. Ucko, M.D. Berlin, L.R.C.P.E.

The method of examining vaginal smears advocated by Papanicolaou (1933) and studied by Papanicolaou and Shorr (1935 and 1936) is increasingly employed and has proved to be of value for the recognition of the œstrin response in women. The diagnosis of menopause can easily be made by examining a smear, and the quantity of œstrin necessary to get a full œstrin response can be ascertained. Minor degrees of œstrin deficiency may also be detected by this method, and Papanicolaou has succeeded in distin-

[1] Cooke, W. E., *Brit. med. J.* 1934, **2**, 629.

guishing between normal smears typical of the different stages of the menstrual cycle.

The technique of taking the smear is quite simple. A dry glass tube fitted with a rubber bulb is introduced into the vagina, and a small amount of the vaginal secretion is removed by suction and spread out on a glass slide like a blood film. Before the smear is completely dry the slide is put into a mixture of equal parts of alcohol and ether, where it can be kept indefinitely. Papanicolaou's method of staining the smear is, however, rather complicated and requires the facilities of a laboratory. The following simple method can be used by any practitioner and gives, I think, equally good results.

Methylated spirit is poured on the film and allowed to remain for two minutes. It is then removed and the film is stained for twenty minutes with a diluted Giemsa solution prepared by adding 10 drops of the standard solution to 5 c.cm. of distilled water. The slide is then washed with distilled water and allowed to dry completely. A drop of Canada balsam is put on and a cover-glass applied.

Slides prepared in this way can be kept for comparison with later smears from the same patient. Entirely cornified vaginal epithelium cells are stained red by the eosin, partly cornified cells violet, and non-cornified cells blue.

REFERENCES

Papanicolaou, G. N. (1933) *Amer. J. Anat.* **52**, 519.
— and Shorr, E. (1935) *Proc. Soc. exp. Biol., N.Y.* **32**, 585
— — (1936) *Amer. J. Obstet. Gynec.* **31**, 806.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF THERAPEUTICS AND PHARMACOLOGY

AT a meeting of this section held on Dec. 13th the chair was taken by Dr. E. C. WARNER, vice-president, and a discussion on recent development in the

Treatment of Addison's Disease

was opened by Dr. S. LEVY SIMPSON. He surveyed the older methods and said that the preparation of a potent adrenal extract by Swingle and Pfiffner in 1930 had signalised the first real advance. The next advance had been the demonstration by Loeb and his colleagues in 1935 that sodium salts could maintain health or lower the dose of extract required. Then it had been shown that a low-potassium diet still further reduced the dose of extract necessary, but this technique was perhaps hardly worth the trouble. No material success had been obtained from the various methods of extracting the adrenal cortex for oral administration. Some benefit had been seen from giving extract adsorbed on charcoal. No major advance, however, had been made until the essential constituent of the cortex had been isolated and synthesised. In 1937 Steiger and Reichstein in Zürich and, independently, Kendall and colleagues at the Mayo Clinic, had isolated corticosterone with the formula $C_{21}H_{28-30}O_4$. The substance had not yet been synthesised, but desoxycorticosterone, a closely related compound, had been made and 5 mg. of it was equivalent to 10 c.cm. of cortical extract. In four cases the substance in oily solution had been given intramuscularly. In two the injections had been painless but in the other two painful lumps had made it impossible to continue treatment. Tablets had been implanted under the skin, also, whence they were slowly absorbed. Four 50 mg. tablets had been implanted in each of the four patients under local anæsthesia, and this seemed to be as effective as intramuscular administration. The duration of effect was not yet known; probably the tablets would go on acting for two or three months.

The first patient was so sensitive that she went into a crisis if she gave up cortical extract for three or four days; 5 mg. of desoxycorticosterone had replaced 20 c.cm. of extract, and four subcutaneous tablets had enabled her to do without any extract for several weeks to date. In a second patient desoxycorticosterone had proved much superior to 5 c.cm. of cortin. Two weeks after the insertion of tablets his blood sodium estimation had risen from 295 to 324 mg. per 100 c.cm. and his chloride from 345 to 382 mg., and he was very happy at being freed from injections. A third patient, very feeble on 5 c.cm. of cortical extract, had improved considerably on 5 mg. of desoxycorticone acetate. After the implantation of four tablets his weight had risen 7 lb. in ten days. His blood chemistry, as occasionally happened, did not reflect his clinical condition. The fourth patient, a girl of 18, had deteriorated on desoxycorticosterone when salt was stopped and was better on 10 c.cm. of cortical extract. On Oct. 28th four tablets of desoxycorticosterone had been implanted and she had improved and been sent home without any treatment. On Dec. 4th she had no symptoms and her weight and blood pressure had risen appreciably. The synthetic hormone did not appear clinically to be the only constituent of the active cortical extract.

Dr. J. F. WILKINSON pointed out that the best results were obtained in patients apparently free from tuberculous foci. Initial daily doses of 60 to 100 c.cm. of cortical extract might be needed and the maintenance dose varied from 2·5 c.cm. to 30 c.cm. monthly. Thirteen patients not treated with extract had all died within eight weeks. Of thirteen cases treated four had died; two of them had been grossly tuberculous and had died suddenly after a month. An atrophic case had survived eight weeks and the fourth had died of auricular fibrillation after 32 weeks of complete remission. The other nine patients were still alive and had been on cortical extract for varying periods from 4 to 56 months. All had been typical severe cases with classical symptoms. One patient had needed over 6 litres of extract to keep him well during fourteen months, and his maintenance dose was 20 c.cm. daily. Another was perfectly well on 15 g. of salt daily and had had no extract for four years. The cost of treatment was an important item for poor patients and a reasonably cheap synthetic substance was therefore a great advance. Most patients had a subnormal temperature, but little periods of pyrexia indicated tuberculosis and were often wrongly attributed to injections. Desoxycorticosterone had been given to four cases; one had died. The dose had been from 5–18 mg. daily intramuscularly. No local or general reactions had been seen. The results had been very good. A patient who could not keep well on less than 20 c.cm. of cortical extract intramuscularly daily was keeping very well indeed on 5 mg. of desoxycorticosterone twice a week. The other two patients were well on 5 mg. weekly. Salt and salt mixtures had proved valuable over long periods of treatment, but the

potassium-free diet was troublesome for patients at home. In severe cases salt was no good by itself, but when improvement on cortical extract began, salt was a valuable adjunct. A few patients could not tolerate it. Low-potassium diet had not given striking results. Whatever treatment was given must be given adequately and not reduced because of cost or trouble.

Dr. H. P. HIMSWORTH described a fatal anaphylaxis after intravenous administration of cortical extract during the relapse of a treated patient. The patient had been sent out on 5 c.cm. daily, and 20 g. of salt. She had caught influenza just before Christmas but had been discovered unconscious next morning and given an unknown cortical preparation by her doctor and rushed to hospital, where she had had 80 c.cm. of Cortin (Organon) intravenously. Her recovery had been impressive, but the same evening she had passed into status asthmaticus and she had died next day. At autopsy the lungs had ballooned out, and the adrenals had shown atrophy. The speaker was not convinced of the value of the low-potassium diet, but he was sure of the deleterious effect of a high intake of potassium and thought it was worth while to see that patients did not take too much. Salt was an adjuvant of considerable value, but the disease must be controlled by cortical extract before salt was given. There might, however, be more than a mere adjuvant action; in one case the blood and pulse pressure had remained low until salt was given, despite varying doses of extract. The pulse pressure of these patients was always low before treatment. Desoxycorticosterone had been tried on two patients. One man, who had shown local reaction and initial clinical benefit, had subsequently relapsed and not felt well on it, although his blood picture had continued to improve. He had become quite well when returned to cortical extract. A similar result had been obtained in a girl of 17. Both patients were probably tuberculous and the girl had had *B. coli* bacilluria. Infection did not, however, seem to account for the failure of desoxycorticosterone. There had been no vitamin-B deficiency. The preparation might be toxic over a long period, but more probably the explanation was that it did not contain all the principles necessary. While cortin was reliable and safe, desoxycorticosterone was still in the experimental stage.

Dr. F. AVERY JONES described his experience of desoxycorticosterone acetate in two cases. One patient had improved strikingly on 10 c.cm. of cortical extract daily with 12 g. of sodium chloride and 4 g. of sodium bicarbonate. She could, however, only live a restricted life. An attempt to reduce the dosage had failed, and produced a dangerous crisis. She was very sensitive to reduction of dose. She had improved considerably when the extract was substituted by 10 mg. of desoxycorticosterone acetate. After ten days she had had fever and lassitude, and four days later she had been in a bad condition; 100 c.cm. of cortical extract had therefore been given, with great benefit. After that 20 mg. of desoxycorticosterone had been given, but the fever had continued until extract was again given. The blood-urea throughout had remained below 30 mg. per 100 c.cm. Desoxycorticosterone had been tried twice again, with the same results, and she had had in the end to go back to extract, although her blood picture never reflected the clinical relapses. The large dose produced a febrile reaction in a shorter time than a small dose, suggesting a toxic action. Injection of the excipient alone caused no pyrexia. Desoxycorticosterone appeared to be potent but unreliable. The second patient, a women of 41, had had Graves's disease and eventually succumbed to Addison's disease. A sister had had the same fate. Another sister had a simple goitre and another had died of phthisis. The patient had been very ill with headache, nausea, and vomiting. Salt had invariably made her sick, however disguised. At first the desoxycorticosterone produced an improvement when cortical extract had failed, but, as in the other patient, desoxycorticosterone always in time produced clinical relapse with fever, the condition being cleared up by cortical extract. Autopsy had revealed simple atrophy.

Dr. H. W. DRYERRE agreed that the low-potassium diet was very difficult, but said it was essential not to give a high-potassium diet. An attempt had been made to estimate the value of these diets by taking daily readings of weight and blood pressure. There was not much effect on blood pressure, but the weight was markedly affected unless the patient were at the same time receiving cortical extract. Variations of potassium diet could also be covered by giving adequate sodium. One patient had gone into crisis within three days on two occasions when he had dropped his salt on home diet, but had shown no crisis in hospital when salt was withheld on a low-potassium diet.

The Mayo Clinic had evolved a test for adrenal insufficiency by estimating sodium and chlorine excretion in the urine on low-sodium, high-potassium diets. Normal people, even if debilitated, could control the amounts excreted; patients with Addison's disease could not. The chlorine figures were not diagnostic but the sodium was always significantly high. The blood estimations were not reliable for diagnosis. The test might prove a valuable method of estimating the value of cortical extracts or synthetic substitutes. Addisonian patients sometimes showed startling reactions to analgesics and opiates. Morphine had caused a typical hypoglycæmic attack in one case.

BRITISH INSTITUTE OF RADIOLOGY

THE twelfth annual congress of this institute was held at the Central Hall, Westminster, from Dec. 7th to 9th, under the presidency of Mr. W. E. SCHALL. The nineteenth Mackenzie Davidson lecture was delivered by Mr. G. SHEARER, D.Sc., who spoke on the influence of X rays in pure and applied science. The Silvanus Thompson lecture by Dr. R. LEDOUX LEBARD of Paris gave members of the institute an opportunity of welcoming a distinguished member of the French medical profession whose radiological work enjoys an international reputation. He described his special methods for outlining the details of the mucous membrane and illustrated his remarks by a number of exceptional radiograms.

Contact Therapy

Prof. J. M. WOODBURN MORISON demonstrated films showing the results of contact therapy by means of the Chaoul apparatus. In his opinion X rays could do all that radium will do in the treatment of cancer. Moreover, X ray treatment was much cheaper than radium treatment. It did not seem to matter whether the dose of radiation was given in one treatment or whether it was split up into several; what was chiefly important appeared to be the total

quantity of r units received by the tumour. It should be possible to treat internal cancers by the short-distance method, but this entailed surgical exposure of the lesion and application in the operating theatre of the X ray tube to the tumour site.

Dr. J. S. FULTON (Glasgow) enumerated the advantages of the contact method as follows: (1) the rigidity of the tube; (2) the high intensity of the radiation, making it possible to give the treatment in a single dose; (3) the patient need not be kept in hospital; (4) the tube can be used in dermatological work by increasing the focus skin distance; (5) there is no problem of stray radiation; (6) as the characteristic radiations of lead are not evoked at low voltages, lead can be used to protect the eyeball—for example, in treating lesions of the inner canthus of the eye. Compared with radium bomb therapy the Chaoul method was much cheaper, and it could deal with much larger numbers of patients. Finally Dr. Fulton showed a film demonstrating the method and the softness and mobility of the healed skin.

Dr. G. J. VAN DER PLAATS (Maastricht) dealt with the advantages of "caustic" contact therapy, using the Philips tube. The advantages of this tube over the Chaoul tube were: (1) higher intensity; (2) lower percentage depth dose, because the average wave-length is longer than that used in the Chaoul method; also less fall-off in percentage dose to the side of the field; (3) rapidity of treatments; (4) flexibility of the tube, so that it can be held in position even though the patient moves; (5) sparing of the normal tissues if treatment is limited to an area 1 mm. outside the actual treated lesion. Dr. Van der Plaats gave an estimated dose of 3000 r units to the base of each lesion. The area superficial to this got an enormously higher dose—hence the name "caustic" therapy. Should the whole neoplasm not be completely cured by one treatment second treatments were given. Large areas were treated by multiple fields. Examples of all kinds of superficial lesions were demonstrated by a film.

Radiography of the Urinary Tract

Dr. G. E. VILVANDRÉ, speaking on aspects of renal radiology, emphasised the importance of including the whole of the urinary tract in any radiographic investigation. It was necessary to guard against possible accidents both in injection by ureteral catheter and in intravenous injection for urography. Dr. Vilvandré discussed the differentiation between renal and biliary calculi, and reviewed a number of conditions, including horse-shoe kidney, renal tuberculosis, and pyelitis of pregnancy.

Sir GIRLING BALL confined himself chiefly to infections by the *Bacillus coli*. The infection was blood-borne, affecting the kidney first and the rest of the urinary tract later. Its tendency to persist in chronic form was due to the presence of some organic lesion of the tract, and it was in the elucidation of this predisposing lesion that radiography had its place. Emphasis was laid on cystoscopy as a preliminary to radiological investigation. In the speaker's opinion the calyces dilated first in cases of calculus, whereas in other forms of hydronephrosis the pelvis dilated first. Radiography was important in "quiet" unsuspected cases. Urography was not always successful in the investigation of such cases, and retrograde pyelography was indicated wherever any element of doubt remained.

The congress exhibition of X ray apparatus is noticed on p. 1424.

NORTH WESTERN TUBERCULOSIS SOCIETY

A MEETING of this society held in Manchester on Oct. 24th with Dr. GEORGE JESSEL, the president, in the chair, was devoted to

Bronchiectasis

Dr. WILLIAM BROCKBANK said that the condition consisted in dilatation of the bronchi or bronchioles, with or without secondary infection. Among the causes were congenital narrowing of bronchi, pressure from a growth or aneurysm, intrabronchial tumours or foreign bodies, and most inflammatory diseases of the lungs and air-passages. It was possible that inflammatory changes caused the bronchial musculature to lose its tone and become dilated; the elastic fibres, and later the cartilage, were destroyed and the whole was replaced by fibrous scar tissue which might give rise to a partial obstruction, damming back alveolar secretions and leading to a softening of the walls. There was also a pull exerted on the softened walls by the fibrous tissue. This theory, however, did not account for the dry variety of bronchiectasis in which there was little cough or expectoration, rarely any evidence of bronchitis, and very little fibrosis. Lander and Davidson had lately recorded their conviction that massive collapse of the lung was an invariable antecedent to the bronchial dilatation. Whatever might be the cause or whatever the type of bronchiectasis, said Dr. Brockbank, it was essential to realise that the dilatations were nearly always surrounded by fibrous tissue, that the cavities were themselves lined with epithelium and that it was almost always the lower lobes that were affected. These facts influenced the whole course of treatment.

Copious foul yellow sputum was characteristic of the advanced stage only, and often bronchiectasis remained long unsuspected because the signs and symptoms were so slight. In the dry type of bronchiectasis there was cough with not more than half an ounce of sputum, which was not typical bronchiectatic sputum, and hæmoptysis which might be repeated and profuse. The constitutional symptoms were mild or absent and the physical signs indefinite. Other types might be masked by contributory diseases—chronic bronchitis, asthma, pulmonary fibrosis, tumour, or emphysema. The bronchitic type was the most common. Here physical signs, apart from rhonchi and râles, were usually absent and suspicion was aroused only by the clubbing of fingers, the unsatisfactory response to treatment, and (radiologically) the fibrosis at the bases of the lungs.

Bronchiectasis was mostly bilateral and the treatment mainly medical, for the surgeon was concerned only with unilateral disease. In dry bronchiectasis a simple tolu and squill cough mixture and breathing exercises only were needed. Where the sputum was fairly copious, creosote in capsules or inhaled was useful. Some preferred garlic to creosote. Menthol and guaiacol, injected intratracheally with a special syringe, was also advocated. Postural drainage was a valuable adjunct but must be kept up indefinitely; it was necessary to determine the exact area diseased so that the posture adopted should drain the sputum into the main bronchus, whence it could be expectorated.

Cases suitable for operation were those with (1) unilateral disease, (2) foul sputum, (3) recurrent

attacks of pneumonitis, (4) continual troublesome cough, or (5) repeated hæmoptysis associated with dry bronchiectasis. Artificial pneumothorax had nearly always failed.

Mr. A. GRAHAM BRYCE, after alluding to Lee Lander and Davidson's view that atelectasis (in the broad sense) always precedes bronchiectasis, referred to Hedblom's use of phrenic avulsion in cases of delayed resolution or early pulmonary fibrosis after broncho-pneumonia; this produced symptomatic cures which did not relapse and in which bronchography showed no dilatation. Alexander, too, had successfully used the phrenic-crush operation in suppurative pneumonitis before the stage of abscess formation or of chronic bronchiectasis. Artificial pneumothorax and phrenic avulsion were, however, on the whole unsatisfactory, and phrenic avulsion had the special disadvantage that it interfered with the efficiency of the cough mechanism. Thoracoplasty had now been almost abandoned in the treatment of non-tuberculous bronchiectasis. Postural drainage was a method of great importance, both by itself and in the pre- and post-operative management of cases treated surgically. Bronchoscopic aspiration for bronchiectasis he regarded as largely a waste of time, although he advocated diagnostic bronchoscopy in every case.

Bronchiectasis did not respond to external drainage, since it was difficult to drain more than a few of the affected bronchi. Thoracic surgeons nowadays held that almost the only method of treating the disease which was worth while was ablation. Cautery pneumonectomy had almost entirely given place to lobectomy or total pneumonectomy, but Mr. Graham Bryce thought it could be used in selected cases more often than it was, although it left more deformity of the chest wall than either of the more radical procedures. Before lobectomy the patient should have postural drainage for four to six weeks and it was advisable to begin breathing exercises before the operation.

The exact anatomical distribution of the disease was extremely important to the surgeon and it was necessary to make bronchograms of each lung separately. An apparently excellent postero-anterior bronchogram was often found to be inadequate when a lateral film was made. In children, who required a general anæsthetic for every Lipiodol radiogram, it was often possible to locate the disease accurately from a single picture. Where all the lobes of one side were affected, the introduction of a little lipiodol into the base of the other lung might demonstrate that the case was beyond the reach of surgery and thus save the patient attending for further bronchography. Mr. Graham Bryce used a catheter introduced through a laryngoscope via the mouth or, in some cases, Singer's method. Blood transfusion or the oxygen tent were often needed in the immediate post-operative period, although he did not use them as a routine. A bronchial fistula and a localised empyema almost always developed and the patient was usually in hospital for two months after operation.

Prof. Sauerbruch's very recent analysis of 387 lobectomies revealed a mortality which varied from 13 to 24 per cent., the average being 21 per cent. Churchill of Boston had a series of 40 lobectomies for bronchiectasis with a mortality of 5 per cent. The speaker's own series comprised 28 operations on 27 patients. The immediate mortality-rate, calculated on 5 patients who died within two months of the operation, was 14 per cent.; but 2 patients died later (1 five months after the operation and 1 two years after) and the over-all mortality was therefore 25 per cent. Of his 20 patients 4 were still under treatment, though in the convalescent stage. Of the 16 others, in 13 the result had been very satisfactory and the patients were able to lead almost normal lives. In none of these was the sputum offensive, even where it had been so before the operation. Of the other 3 all were in good general health although they had some degree of residual bronchiectasis. Mr. Graham Bryce concluded with a warning that thoracic surgery was a highly specialised field in which experience was dearly bought. But in his opinion the surgical treatment of bronchiectasis was well worth while.

REVIEWS AND NOTICES OF BOOKS

Medical Practice in Residential Schools

A Manual for Medical Officers and Others. By F. G. HOBSON, D.S.O., D.M., F.R.C.P., Physician to the Radcliffe Infirmary, Oxford. London: Humphrey Milford, Oxford University Press. 1938. Pp. 284. 10*s.* 6*d.*

THOSE responsible for health in schools have become increasingly dependent upon isolated and scattered articles for their knowledge of advances in the control of community disease. Dr. Hobson has collected much of this information into a book of comfortable size which would have a warm welcome if it did no more than replace the ever growing pile of pamphlets and reprints which the school doctor must at present use for reference. It is, however, not only a reference book, for it carries a message. Dr. Hobson takes his title literally. He is concerned with medical practice and he writes as a clinician who, having enough to say of a practical nature, avoids lengthy discussion of theoretical considerations. He brings his own personal experience to bear on the many problems which he discusses in the order of their importance to the health of the community. He distributes his words according to the same scale and although he gives adequate thought to the diagnosis, treatment, and prevention of some thirty epidemic states he devotes more than one-sixth of his pages to streptococcal infections. Some, particularly those whose concern for the health of schools is administrative, may be surprised by the format given to the book by this practical approach. They should read its message all the more carefully, for nowhere else are the fundamentals essential to the maintenance of health in schools so clearly presented and so fully documented. Others, with less experience of clinical epidemiology, may jib at the author's confident assertions about the ætiology of acute rheumatism and acute nephritis, his treatment of Tonsils-and-Adenoids, and his defamation of the Dick test. They must ask themselves whether a writer so obviously aware of his responsibility would dare to preach heresy.

There is little to criticise in the book. The adequate bibliographies lack a precision which more perfect adhesion to the Harvard code would have given them. Greater emphasis might have been placed upon the need for special care in the selection and control of school nurses, the inadequacy of the minimum standards for dormitory bed-spacing required by the Board of Education, and the importance of recent studies in herd assembly in its

bearing upon school life. The reader perhaps might have been reminded that typed pneumococcus serum is now available in this country, that occlusive dressings will cure obstinate impetigo contagiosa, and that continued basal narcosis may control grave chorea. The book really deserves a title which would attract the attention of a larger body of people than that to which it is specifically addressed. It should be of value to all who keep watch on the health of communities, large or small, and the busy family doctor will find it a convenient handbook of the major part of general practice.

Schoolmasters and school doctors who fail to read Dr. Hobson's advice court disaster.

Special Pathology and Therapeutics of Diseases of Domestic Animals

Fourth English edition. By FRANZ HUTYRA, late Professor of Infectious Diseases at the Ancient Royal Veterinary College, Budapest; JOSEPH MAREK, late Professor of Special Pathology and Therapy at the Royal Hungarian Palatin Joséph University, Budapest; and RUDOLPH MANNINGER, Professor of Infectious Diseases at the University. Edited by J. RUSSELL GREIG, Ph.D., M.R.C.V.S., F.R.S.E., Director of the Moredun Research Institute, Edinburgh. London: Baillière, Tindall and Cox. 1938. Pp. 2429. £6 6s. (per set of 3 volumes).

THE authors of this substantial work have tried, so we are told in the preface, to meet the needs both of research workers in comparative pathology and of practising veterinarians. If they have not succeeded it is because of their tendency to stress the clinical rather than the ætiological or pathological concept of disease and to give space to the ways of treating individual cases rather than to preventive measures. Comparative pathologists would have valued the inclusion of discussions on general problems, for example on neoplasia; tumours are mentioned only under regional headings among lesions of the stomach, kidney, or other organs. Another defect from the research worker's point of view is the lack of a bibliography, for the references to original work give no guidance as to where it may be found.

The first volume deals with infectious diseases due to bacteria, viruses, and protozoa; the other two are concerned with the affections of the different organs and tissues of the body. In addition to well-documented infections, such as anthrax, pasteurellosis, and canine distemper, there are adequate accounts of diseases of which our knowledge has been more recently acquired, notably Aujeszky's disease, Rift valley fever, Newcastle disease, and trichomonas abortion of cows. The descriptions of some disorders might have been transposed with advantage. For example, infectious anæmia of horses is included in the third volume under diseases of blood and the blood-producing organs, and necrotic dermatitis of sheep, ringworm, and the various forms of mange find a place in the same volume under diseases of the skin; whereas purpura hæmorrhagica, described in the text as "an acute non-contagious disease," is to be found in the first volume.

Any critical estimate of a book of this scope must take account of the difficulties of discriminating between material that is still sufficiently acceptable to be worth including and material which is definitely obsolete even if no modern theory has replaced one discarded on good grounds. Current teaching is well reflected in the sections on metabolic disorders and on the animal parasites, for example, but much of the bacteriology is scrappy if not actually out of date. The relative importance of different diseases must be a matter of opinion, but in our view the proper balance would have demanded more than half a page for tularæmia and a couple of pages for psittacosis when over 20 pages are allotted to dourine. This work may well continue to supply what the practising veterinary surgeon wants, but drastic alterations and rearrangements of the text would be required before we could commend it to research workers.

Handbook of Hæmatology

Edited by HAL DOWNEY, Professor of Anatomy, University of Minnesota Medical School, Minneapolis. London: Hamish Hamilton Medical Books. 1938. Pp. 3136. £16 16s. (4 volumes).

HITHERTO there has been no authoritative handbook of hæmatology in English, though there are many small text-books. Such an encyclopædia is now available in four volumes edited by Prof. Hal Downey of Minneapolis. Progress in the practical phases of all science depends, he remarks, on adequate knowledge and appreciation of the fundamentals on which the subject is based and hæmatology, as a branch of biological science, is no exception. A large portion of this book is therefore devoted to these fundamental scientific aspects, such as comparative hæmatology, the origin and relationship of blood-cells, relations between blood-cells and cells of the connective tissue, and pathological changes in the blood-forming organs. The approach made to the problems of hæmatology is largely anatomical, and it may be salutary, after the last ten years' intensive experimental work in this field, to be brought back to the bedrock of histology. In the handbook of Utopia however there will surely be a more even balance kept between the morphologist and the experimentalist than is attempted here.

The subject is divided into 44 sections contributed by 38 different authors, each a specialist in his field. The conclusions and opinions are almost invariably based on personal research and a critical review of international literature. Much new work is published for the first time. The review, for instance, of the pyrrol pigments by C. T. Watson covers an important field of investigation which has not hitherto been analysed and brought into relationship with current problems. This method inevitably results in overlapping both of facts and problems. As Prof. Downey says in his introduction, since he has not attempted to influence the authors, considerable divergence of opinion is often expressed. The junior student will find this lack of clear-cut conclusion confusing. The older worker may take comfort from the fact that such masters as Hal Downey and William Bloom disagree over the origin of the monocyte. The handbook is clearly intended for those who are engaged in research, and those already familiar to some extent with the problems discussed, who will appreciate so searching a review of the widely scattered aspects of their subject. The bibliography, with few exceptions, appears to be complete; the 50 coloured prints and 1448 illustrations, largely microphotographs, are admirable. Editor and publishers may be congratulated on their courage and vision.

Messrs. John Wright and Sons of Bristol inform us that the "Ship Surgeon's Handbook" by Dr. Bryce J. Macaulay, which was reviewed in our issue of Oct. 1st (p. 779), has been withdrawn and will be issued under the title of the "Ship Surgeon's Pocket Book."

THE LANCET

LONDON: SATURDAY, DECEMBER 17, 1938

HUNGER IN SPAIN

WAR has driven nearly three million refugees into the parts of Spain still held by the Government. At the same time the food available behind the Government lines has sharply diminished because the insurgents have conquered the inland areas that normally supply industrial Catalonia, because labour has had to be withdrawn from the land, and because the ports are to some extent blockaded from the air. The refugees—excluding those who find work and wages—represent an addition of a fifth or a quarter to the ordinary population, and now that food must mostly be imported this addition of "useless mouths" is obviously a very serious liability. Naturally there are various ways of looking at such a liability. The purely military mind will say: "If the Government was weak-minded enough to allow old men, women, and children to escape into its territory, so much the worse for the Government. Any interfering attempt to feed a refugee robs General Franco of a legitimate advantage." A second view is that outside bodies such as the League of Nations may fairly provide subsistence for the refugees so long as none of it goes to the ordinary civil population or the soldiers. A third view is that in the long run good rather than harm must come from averting the starvation of these people living only a few hundred miles away from us. This is the aim of various organisations such as the International Commission for the Assistance of Child Refugees in Spain, the National Joint Committee for Spanish Relief, the Society of Friends (English and American), and the Spanish Medical Aid Committee, all of which are distributing food to large or small groups of refugees—mainly children.

In October Sir DENYS BRAY and Mr. LAWRENCE WEBSTER visited Spain on behalf of the League of Nations. They were asked to answer three questions: (1) is the refugee population in Republican Spain in need of food relief? (2) are the refugees differentiated from the native civil population? and (3) can a scheme be devised whereby food supplies provided would be distributed to the refugees and the refugees only? The answer to all these questions was Yes, and presumably suggestions that the League should send help will come before the Council at its January meeting. Meanwhile, though BRAY and WEBSTER say that the present private organisations cannot do more than touch the fringe of the problem, they represent for a great many Spaniards the chief hope of keeping their children's health. The letters sent back by members of these organisations show how keenly they feel their frequent inability to help—an inability arising from lack of enough support at home. "It was hard for me, as an Englishwoman," writes one, "to face that hungry old man without a sense of shame. I could imagine the shops in England heavy with food . . . fruit and rice, and milk and meat, eggs and potatoes and cauliflowers, and big, crusty loaves." Two grown persons in Madrid were getting "a handful of chick peas, small and wrinkled, and with a fair admixture of refuse. Their next ration of food was not due till two days thence, the best they might hope for the following day being one onion." Madrid (now proudly termed by its inhabitants the Capital of the World) lies 2400 feet above sea-level and is swept by icy winds all winter: there is no fuel left. In the schools there "it frequently happens that a child will faint during the morning because it went to bed without supper to speak of and set out in the morning without even a hint of a breakfast." Those caught in their years of most rapid development are pale and listless and very weary: "my son is ten years old; he has not grown for two years." Dr. AUDREY RUSSELL, whose letter appears on p. 1437, wrote recently from her observations in Barcelona that there are a number of children between six months and two years who cannot survive more than a few weeks unless something is done about them. And apart from frank deficiency diseases and starvation the spread of infections such as tuberculosis grows daily more menacing.

There is at the moment no reason in international or any other law why food should not go to Spain; and even the risk that it will fail to reach its destination is much smaller than might appear. The remoteness of the Spaniards and the prior claims of our own people may be urged by those whose sense of nationality is very strong; but there can be no question whose needs are most urgent. If we ourselves were engaged in desperate war we might appreciate the logic of foreigners whose charity began and remained at home; but we should appreciate still more the help of those who enabled our children to survive for what we hope will be a happier future.

AURAL VERTIGO

THE minute examination of the labyrinth is so difficult, and the opportunities for making it in cases of aural vertigo so rare, that the investigations reported a few months ago by HALLPIKE and CAIRNS[1] are not likely to be repeated often. Nevertheless they go some way towards putting the pathology of this condition on a firm basis. In the two cases they examined they found such

[1] Hallpike, C. S., and Cairns, H., *Proc. R. Soc. Med.* September, 1938, p. 1317; also *Lancet*, 1938, 1, 1163 and 1171.

an enormous dilatation of the saccule and of the scala media of the cochlea that the perilymph spaces were virtually obliterated. The result of this obliteration is to abolish the cushioning action of the perilymph. The slightest increase in the quantity of endolymph then produces a rise of pressure which paralyses the labyrinth, and the unopposed action of the active labyrinth on the opposite side causes vertigo. This explanation is supported to some extent by an experiment described by Mr. ROYDON PEACOCK in our current issue. The findings of HALLPIKE and CAIRNS, together with his own and A. J. WRIGHT'S experience of the treatment of Menière's syndrome by injecting alcohol through the oval window, led him to try the effect of simple labyrinthine puncture without the injection of alcohol. In the one case of Menière's disease in which this was done the patient remained free from vertigo for two months, but then he had a severe attack. It seemed that puncture relieved the distension of the endolymph sac for a time, but since the end-organs were not destroyed the symptoms returned when the sac refilled.

The tension of the endolymph no doubt varies with different states of metabolism, and this explains the intermittent character of the vertigo. When the end-organs are completely destroyed central compensation occurs and vertigo soon ceases, but such destruction does not often happen spontaneously. It can be produced artificially by section of the eighth nerve, by surgical exenteration of the labyrinth, or by destruction of the labyrinth with alcohol. The disorder may also be attacked from the other end by attempting to lower the endolymph tension through influencing the metabolism. Encouraging results have been obtained on these lines by limiting the intake of fluid and salt, with or without the administration of ammonium chloride. On another page Mr. CAWTHORNE and Dr. FAWCETT relate their experience of such treatment in eleven patients, in ten of whom it had a definite effect on symptoms. On the same principle the induction of sweating by pilocarpine has recently been strongly recommended by LEICHSENRING.[2]

The symptoms of aural vertigo vary much in their severity and amenability to treatment. Often the vertigo is associated with disease of the middle ear and may be cured by treatment of this condition; in other cases surgical measures may become necessary, but the new work shows that limitation of fluid and salt should be given a fair trial before they are undertaken.

NAMELESS INCAPACITY

THOSE who administer National Insurance are baffled by sickness and disablement benefits which continue high despite every effort at reduction. On a recent public occasion Dr. ROBERT HUTCHISON stated the problem in a few words. Largely by the efforts of preventive medicine, mortality has been reduced and expectation of life has increased, but there remains an enormous and even an increasing amount of morbidity. Dr. HUTCHISON did not stop there. He went on to suggest that much of this morbidity is due to functional diseases of psychological origin; if these are to be prevented, preventive medicine must widen its scope to deal with mental and moral as well as material environment. Health after all is a state of perfect adjustment between environment and organism. On the physical side this adjustment has largely been effected, but on the mental side it is rendered increasingly difficult by the rush of present-day living, by the anxieties, uncertainties, and perplexities which tend to undermine health and to render not worth living the longer years that preventive medicine has given us. The situation he describes is well illustrated by the Scottish insurance medical records which contain a body of data not available in England. Ever since 1930 the Scottish Department of Health has issued annual reports, rich in statistics, on incapacitating sickness in the insured population. In 1937 a valuable survey of the statistical material presented in the reports was made by Dr. P. L. MCKINLAY of the Scottish Department of Health, and this year important contributions to the subject have been made by two regional medical officers of the department: Dr. J. L. HALLIDAY and Dr. A. B. WALKER.

Dr. HALLIDAY contends that the Scottish data show that the maintenance of the present high sickness prevalence must be attributed to an increase in psychoneurotic and psychosomatic illness, the latter term connoting both an ætiology and a mechanism. He writes[1]:

> "as regards ætiology, it indicates that the external agents which provoked the reaction of illness were of a special kind, being neither physical nor chemical nor micro-organic, but psychological—as, for example, the loss of a beloved object. As regards mechanism, it indicates that the external agent is encountered by the individual, not directly by the outer or inner surfaces of the body, such as the skin or mucous membranes, but indirectly, via the special senses and the integrating mechanism of the diencephalon, autonomic nervous system, and endocrine glands."

The presence of psychosomatic illness in a community is, Dr. HALLIDAY thinks, far from being fully revealed in morbidity statistics by the use made of such diagnostic labels as "neurasthenia," "nervous debility," and "neurosis." His own study of incapacitating illness in insured persons confirms the conclusion of other workers that there are many patients stated to be suffering from such conditions as gastritis, rheumatism, anæmia, heart disease, peptic ulcer, and chronic bronchitis, in whom the condition so labelled is merely a localised manifestation of psychosomatic disorder. The symptoms in such cases usually appear in the younger age-groups or in early middle life, and tend to become fixed for life by routine mechanistic treatment, such as "perennial alkaline powders for peptic ulcer, course upon course of physiotherapy for rheumatism, or successive nasal operations for bronchitis."

[2] Leichsenring, E., *Med. Klin.* Oct. 14th, 1938, p. 1361.

[1] *Brit. med. J.* 1938, 2, 11.

An upward trend in psychosomatic illness might be inferred, Dr. HALLIDAY argues, if morbidity statistics showed an increase both in the average duration of incapacity and in the certificated causes known to cover psychosomatic illness, and if these increases were most marked in the younger age-groups. Actually the Scottish data available since 1930 show marked increases of this kind among insured persons certified as incapable of work. The number of "chronic" patients—i.e., those on the sick list continuously throughout a statistical year, has increased by one-third; and in the year 1935–36, the latest for which statistics have been published, such "chronic" illnesses accounted for more than one-half of the nineteen and three-quarter million days of incapacitating sickness among the Scottish insured population. The chief increase has been in the conditions covering psychosomatic disorders and in the younger age-groups. Dr. HALLIDAY thinks the ordinary methods of medical examination should be modified to provide for the detection and treatment of underlying psychosomatic factors; otherwise the extended provision of facilities for the mechanistic treatment of symptoms may, by inducing fixation, increase the duration of invalidism. He quotes with approval Dr. MCKINLAY'S remark: "The efficiency of a service must ultimately be judged by the standard of health of the people rather than by the nature and amount of the facilities available for its preservation."

Dr. WALKER, on the other hand, thinks Dr. HALLIDAY attributes greater relative importance to psychosomatic factors in the rise in incapacitating sickness than can be justified by the statistical evidence; for there has been, he insists,[2] a definite rise in certificated causes of incapacity which are certainly of organic origin—e.g., tuberculosis and injuries. To diminish incapacitating sickness he would provide fuller facilities for early diagnosis, so that trivial conditions may be distinguished from conditions which, though not trivial, present initially trivial symptoms. There is need also for routine and periodical medical examination for adults as well as for children. He is convinced, however, that the psychic element in disease is of great importance, and he concludes that "the large volume of incapacitating illness due to or associated with states of anxiety can be prevented, not so much by psycho-analytic or other psychotherapeutic methods of treatment, but by Christian sympathy and understanding and a re-awakening in the patient and his attendants of the spirit and faith of the Great Healer." In this conclusion Dr. WALKER is in general agreement with Dr. C. G. JUNG, who has stated[3] that among his patients over the age of 35 there was not one whose problem in the last resort was not that of finding a religious outlook on life, and who concluded[4] a congress of psychotherapy at Oxford in the recent summer with the words: "It is an insanity of the white man that he has lost the religious order of life."

[2] *J. R. sanit. Inst.* August, 1938.
[3] Modern Man in Search of a Soul, London, 1933.
[4] See *Lancet*, August 6th, pp. 325, 336.

DENTAL AUTONOMY

SIR FRANCIS ACLAND thinks the time may have come for the dental profession to be master in its own house. He was opening the 35th session of the Dental Board of the United Kingdom, and was recalling the steps which led up to the establishment of a separate dental council. The story begins with the departmental committee which twenty years ago inquired into the extent and gravity of the evils of dental practice by persons not properly qualified. This committee, over which ACLAND himself presided, came to the conclusion that the control of the dental profession and the custody of a register should be entrusted to a statutory board under the General Medical Council. Sir DONALD MACALISTER had reminded the committee that in 1878, when the first Act regulating dental practice was passed, dentistry was put under the medical council because there was no dental profession; this outside control was to him a step in the evolution which he regarded as ultimately inevitable, namely, the establishment of a separate dental council. Sir FRANCIS ACLAND himself speaks of the Dental Board as it now exists as the kind of halfway house in which British people are generally comfortable for some time.

The action of the Dental Board is at present limited in three directions. The board cannot direct the erasure of the name of a registered dental practitioner for professional misconduct or in consequence of conviction in a court of law: it can only report its findings to the General Medical Council and leave them to act. Further, although recruits to the profession are now almost without exception graduates or licentiates in dental surgery or dentistry, the G.M.C. still retain the power of dealing with applications for registration as colonial or foreign dentists by persons holding qualifications granted elsewhere, and also the power to recognise additional qualifications granted after examination. The compilation of the register is in fact still under divided control, and in the sphere of dental education there is also some division of function between the two bodies. The G.M.C. retain the power to question licensing bodies about courses of study and methods of examining, to arrange for visitation of examinations, and to prohibit any attempt to impose restrictions as to theories of dentistry on candidates offering themselves for examination. It is therefore the General Medical Council and not the Dental Board which influences the progress of dental education by making recommendations with which licensing bodies find it necessary to comply—although the board spends much time and money on the award of bursaries, on raising the standard of teaching in dental schools, and on improving their premises and equipment.

Whether the time has now come for some redistribution of functions between the medical and dental councils, Sir FRANCIS ACLAND did not regard it as for him to say; he simply stated the problem for the consideration of both bodies. But to state the problem is enough. No one doubts the competence of the Dental Board to manage its own affairs.

ANNOTATIONS

SALVAGE OF SCHOLARSHIP

THE events of the last few months have added to the already heavy task of the Society for the Protection of Science and Learning, which seeks to find employment for university teachers and research workers who are exiled on grounds of religion, political opinion, or race. The closure of more university doors to Jews has both increased the number of scholars whom the society must assist and reduced its opportunities of assistance. In Germany the plight of the displaced scholar has become more and more desperate. New restrictions in the practice of medicine and the law, in industry and commerce, and in the occupation of business or residential property have removed his chances of alternative employment, and forced sales and confiscations have made it impossible for him to retire on private means. Even access to libraries and means of publication, which might make poverty endurable, have largely been withdrawn. Lately, too, this persecution has more than ever involved those whose scientific eminence gives them a special claim to assistance. In Austria ruthless dismissals followed abruptly on annexation, and the extension of racial doctrines to Italy this summer has led to the dismissal not only of some hundreds of Italian university workers but also of many German Jewish refugees who had established themselves there. During the period of xenophobia in Russia last year all refugees who had been appointed to posts in that country were expelled and the society had to make special efforts to prevent some of them from being sent back to Germany.

There is no finer testimony to the society's work than the support it has received from universities here and elsewhere. In this country there is hardly a university or college that is not offering sanctuary to at least one refugee, and the various teaching bodies have contributed over £10,000 towards the organisation. Of the 1400 teachers and research workers, who have been displaced in Germany since the society was founded as the Academic Assistance Council five years ago, 520 have been permanently and 290 temporarily established in 38 different countries, Great Britain and the United States taking the greatest number; of the 418 known to have been displaced in Austria about a third have found posts. The main functions of the European countries have been to provide immediate initial relief and to act as distributing centres. In the past year the society has made maintenance grants to 138 displaced scholars, and it is at present contributing to the support of 37 scholars here and in other countries. Its most valuable work, however, has been the development of an international employment exchange, to advise the scholars themselves and coördinate the efforts of universities and government departments. Its funds are derived from membership subscriptions, which now amount to some £3000 a year, and from occasional donations. To meet its increasing commitments it is planning (as Sir William Beveridge indicates on p. 1435) a national appeal next February, and the majority of academic centres in this country have already agreed to help.

THE CARDIO-PULMONARY FUNCTION TEST

THE earliest symptom of cardiac inefficiency is usually dyspnœa on effort, and this serves as a delicate and reliable indicator except in patients who are insensitive or unintelligent. Various effort tests for measuring circulatory efficiency objectively have been used, those depending on heart-rate and blood pressure having now been generally discarded in favour of methods of measuring the respiratory changes. The observer may either watch for obvious signs of respiratory distress produced by a standard exercise, or apparatus may be used to record the changes more precisely. In the cardio-pulmonary function test devised by G. Nylin[1] the patient's oxygen consumption is determined before and at a fixed time after work, this giving a measure of the oxygen-debt incurred by the work. Nylin has found that the percentage increase in oxygen consumption in the healthy subject is independent of the body-weight provided this is within physiological limits. In the examples he gives of the test in coronary disease, it added nothing to what was already known from symptoms and ordinary clinical examination. In valve disease the test may give normal readings, but such cases will usually be symptom-free on effort. In chronic diseases of the lungs he considers the test superior to the determination of vital capacity as a measure of respiratory reserve, although it does not follow that it is superior as an indication of the presence of pulmonary disease. Nylin's rather elaborate procedure may be found useful in recording the progress of an individual patient, but, with rare exceptions, simple interrogation will be a surer basis on which to diagnose early myocardial failure.

DANGEROUS DRUGS RESTRICTIONS

THE Home Office has issued a fourth edition of its memorandum (D.D.101. H.M. Stationery Office. 3*d*.) on the obligations of doctors and dentists under the Dangerous Drugs Acts in respect of the giving of prescriptions, keeping of records, and so on. It gives a list of the drugs involved, though it omits to tabulate the morphine, cocaine, heroin, dicodide, and eucodal preparations which are excluded from Part III of the 1920 Act by the Order in Council of April 13th, 1937. For the latter list the reader is invited to spend another twopence in buying a print of the excluding order (S.R. & O. 1937. No. 327). The memorandum, published as the result of a recommendation in the 1924 report of the Rolleston committee on morphine and heroin addiction, usefully summarises the Acts and regulations. Indeed it goes further, for it mentions desirable precautions—such as keeping dangerous drugs under lock and key when not in use—which are not actually required by the law. There is an appendix containing important paragraphs from the Rolleston committee's report. In the constitution of that committee the medical profession was not inadequately represented; in its report and in the action taken thereon the interests of the profession were not unsympathetically regarded. The closing paragraph of the memorandum justifiably observes that it is desirable that doctors treating addicts should coöperate with the Dangerous Drugs Branch of the Home Office, since such coöperation is often fruitful in preventing addicts from obtaining dual or surreptitious supplies of drugs. No one will underrate the importance of this aspect of treatment. The code of regulations (Article 3 of the principal regulations of 1937) forbids anyone to possess a dangerous drug or preparation unless duly authorised. Possession is "authorised" if the drug or preparation is either supplied on a medical or dental prescription issued in accordance with the regulations or supplied by a

[1] Nylin, G., *Acta med. scand.* 1936, suppl. 93.

duly qualified medical practitioner. To this there is an important proviso. Anyone who obtains dangerous drugs from (or on the prescription of) one medical practitioner while under treatment by and receiving dangerous drugs from (or on the prescription of) another practitioner, commits an offence if he has not disclosed to the former the fact that he is being treated by the latter.

Knowledge that he is committing an offence may have but a slight effect in deterring an addict. Medical practitioners will wish to obey a necessary if complicated law. In particular they need to familiarise themselves with the conditions on which delivery of dangerous drugs can be taken by messenger and with the obligations of record-keeping. Where an offence relates to the keeping of records or the issuing or dispensing of prescriptions and is committed by inadvertence and is not connected with any other offence or intended offence, the maximum penalty is a fine of £50. In all other cases the seriousness with which breaches of the law are regarded can be measured by the fact that the punishment can, if the case is tried on indictment, be as high as ten years' penal servitude and a fine of £1000.

THE LATE PROF. GRAM

Christian Gram, who died on Nov. 14th, was born in 1853 and made his first important contribution to medicine in Denmark in 1884 when he described that system of bacteriological staining which has ever since been associated with his name. In 1891 he was appointed professor of pharmacology, and in 1900 professor of internal medicine in succession to C. M. Reisz. His professional interests covered a wide field: as a laboratory worker he was at one time particularly interested in the blood corpuscles; as a pharmacologist he did much to promote the clinical appreciation of theobromine; as the head of a hospital service he found plenty of scope for his clinical interests; and as a professor he impressed many generations of medical students who learnt to value the personal touch in his teaching.

ANOTHER YEAR OF RADIUM RESEARCH

IN the sixteenth report[1] of this series the work of greatest interest is that on the emission of neutrons and their range of velocity carried out by Prof. F. Paneth, and by Mr. J. A. Saxton and Mr. J. L. O. G. Michiels, at the Imperial College, and that of Prof. F. L. Hopwood of St. Bart.'s. Prof. Hopwood says that the whole series of experiments on neutron and gamma ray irradiation of $K_2S_2O_8$ solution supports the view that the primary action of the radiations, under the stated conditions, is on the water of the radiated solution—which suggests that water plays a very important rôle in the animal body; the reactions are of the nature of chain reactions and the neutron is a thousand times as effective as a quantum of gamma radiation. Nevertheless, as is emphasised in the introduction to the report, the estimation of potential intensity of a beam of neutrons is a ticklish problem; the work already done on it shows how far-reaching must be the investigation of the factors concerned. Of practical importance is the work of Mr. W. V. Mayneord, D.Sc., at the Cancer Hospital on gamma ray dosage in röntgens, on varying the depth dose by filtration and by increasing the focal skin distance, and on the quality of radiation in a scattering medium, while biological studies are undertaken by Drs. Spear and Glücksmann of the Strangeways Laboratory, Dr. C. B. Allsopp at Cambridge, and Dr. J. C. Mottram at Mount Vernon. Points of interest are the finding in the inner nuclear layer of the retina of undifferentiated cells, destined later to become either ganglion or visual cells, which take some part in the attempt at regeneration after experimental damage; and the discovery of indole derivatives in "dopa" solution radiated with gamma rays, showing that gamma radiation has in this respect a property in common with ultra-violet radiation. Dr. Joan Ross has continued her work at the Royal Free on the carcinogenic effects of prolonged exposure to radium combined with intravenous injections of Shope papilloma virus, and the Marie Curie Hospital has investigated the results of combined radiation and applications of œstrone in various time spacings on the production of tumours in mice. Prof. S. Russ and Miss G. M. Scott at the Middlesex report again upon the biological results of prolonged exposure to gamma radiation; even at very low intensities they find a definite deleterious effect. The medical side of the report brings survival figures up to date and notes few changes in the methods of treatment. From the report of the St. Bart.'s unit we learn that a full course of X ray therapy given to 22 inoperable cases of cancer of the breast was found by later mastectomy to have failed to sterilise the tumour (the dose delivered is not stated); the method of radium implant is more promising. The results of the treatment of cancer of the uterine cervix remain good, and the figures for cancer of the rectum show some improvement. The report concludes with an account of the radium treatment of certain non-malignant conditions.

[1] Medical Research Council. Medical Uses of Radium. Summary of reports from research centres for 1937. London: H.M. Stationery Office. 1938. Pp. 48. 1s.

TREATMENT OF CHRONIC ALCOHOLISM

ALL who are experienced in the treatment of chronic addiction to alcohol are aware of the strong grounds for pessimism. Many, however, think that accidental factors, such as the interference of relatives, are largely responsible for the bad results, and that if expert psychological treatment is carried on long enough the patients can be cured. Of the psychological methods, psycho-analysis claims most insistently to be rational and radical. It is, therefore, informative to read Knight's[1] frank statement of the results of psycho-analysis in eleven alcoholics treated in a sanatorium. The total sessions of treatment varied from 65 to 470 hours, and two of the patients were still being psycho-analysed when the report was written. Of the remaining nine, four were taken away by their relatives, one being slightly improved, one relapsing badly, and two being still moderately improved some months later. The other five discharged themselves for various reasons, one being unimproved, three moderately improved, and one much improved. Of eight male alcoholics treated by other methods, two were unchanged, two relapsed after 3 and 6 months respectively, and four were improved when last heard of. Knight's figures cannot be said to be encouraging, but one is more impressed by the account of those who have done well in this series than by the statement (in the discussion that followed the reading of his paper) that in a sanatorium where they have dealt with several thousand cases, eighty patients have remained abstinent out of every hundred who have stayed there for a month and continued with treatment at home.

Knight divides alcoholics into three groups. The first are the "essential" cases, in which psychological

[1] Knight, R. P., *J. Amer. med. Ass.* Oct. 15th, 1938, p. 1443.

conflicts lead to drinking; these are the psychopaths, who are the most difficult to treat. The second, fairly hopeful, group he calls "reactive," since their heavy drinking is precipitated by some discoverable event and often is continued in bouts as a reaction to difficulties. "Symptomatic" alcoholics make up his third group; in them the drinking is only incidental, and their prognoses depend on the main disorder present. This grouping can readily be applied to the cases reported by Minski,[2] who points out that the proportion of alcoholics with psychoses admitted to mental hospitals has changed since the passing of the Mental Treatment Act. The number of alcoholic psychopaths admitted has increased, whereas the number of patients with alcoholic psychoses has apparently diminished; this he attributes to the fact that it is now possible to obtain treatment as a voluntary patient for one's addiction long before certifiable insanity has made it imperative.

A RADIOLOGICAL EXHIBITION

In his introductory remarks at the Thursday morning session of the congress of the British Institute of Radiology last week, Prof. Woodburn Morison said he thought the exhibition of X ray apparatus on view was the finest that the manufacturers had shown since the institution of the congress. All the important manufacturing companies were represented, and almost the whole of modern radiological work was covered, with special emphasis on diagnosis. There were several examples of modern tomographs, and also of high-speed "tele-roentgenological" apparatus, one of which can produce the astonishing figure of 1000 m.a. and can cut down the exposure to 0·015 sec. Also on view were the new non-screen films, with many beautiful examples of pathological lesions, and colour photography was illustrated in all its branches. The therapy section was remarkable for its demonstrations of the short-distance Chaoul and Philips apparatus, and here also were several high-voltage machines of outstanding value. The Victor Company exhibited a model by Mr. W. V. Mayneord, D.Sc., showing the Isodose volume distribution in an area treated by two direct facing fields. This model was made up of layers of Perspex glass on which the Isodose curves at various depths below the surface had been drawn. It gave a clear demonstration of the volume doses and will certainly be a useful adjunct to more precise dosage calculations in modern therapeutic work.

THE KING'S FUND

The annual distribution of grants to hospitals and convalescent homes made by the King Edward's Hospital Fund for London remains the same as in recent years—£300,000. The Duke of Kent, in the chair at a meeting at St. James's Palace on Tuesday last, announced that during the crisis in September the management committee had authorised a payment on account of the larger grants amounting to £90,500, without prejudice to consideration by the distribution committee of the total grant to each hospital as recommended that day. The voluntary hospitals had been called upon by the Government to get ready to receive casualties. The hospitals felt that they had a claim on the Government for expenditure actually incurred on its behalf, but His Royal Highness hoped that the public would remember that the hospitals had lost much revenue through this interruption of their routine activities. The loss had come just when costs were still rising, through no mismanagement on the part of the hospitals, and new sources of revenue would have to be found. The past few months had seen the establishment of the emergency bed service controlled jointly by the Fund and by the Voluntary Hospitals Committee under the chairmanship of Sir Harold Wernher. It was being used increasingly by doctors to obtain admission of urgent cases to hospital with minimal delay, and it saved the doctors from telephoning to one hospital after another only to be told that no bed was available. There was now a day and night service covering the whole twenty-four hours. The interim report of the joint committee shows that over 2800 cases have been dealt with and that the bed service has never been unable to find a bed for a genuine emergency; indeed it has rarely taken more than ten minutes to arrange an admission. Over 1200 doctors have used the service. The whole of the cost is being borne by the Fund, but the expenditure, as the Duke of Kent said, is paying a high dividend in terms of usefulness to hospitals, doctors, and patients.

The King's Fund has appointed a committee to work out a scheme to provide the middle classes above the income limits of the Hospital Saving Association with a system of insurance against hospital expenses and medical and surgical fees. At Tuesday's meeting Lord Dawson remarked that the hospitals originally set up for the needy have to cope with an increasing number of needy people; "and in the near future I should say that most of us will become needy, if not poor, and therefore institutional treatment will become necessary for most of us." Our hospitals, he added, have thus become part of our social fabric, and their work must be coördinated.

MULTIPLE ANÆSTHESIA

The present vogue is to use a number of drugs, and even sometimes a number of methods, to induce and maintain anæsthesia. Historically, the idea goes back at least as far as Claude Bernard, who in 1869 experimented on dogs with morphine and chloroform, finding reciprocal augmentation of the action of one drug by another. This action has been summed up in Buerg's law, which states that "the sum of the combined action of two or more narcotics administered slowly or shortly after each other produces a more powerful effect than the total equivalent quantity of either one narcotic given alone." This reinforcing action of narcotic drugs on one another is known to anæsthetists as "synergism." It has been employed especially by Gwathmey, who has put into service the synergistic action of magnesium sulphate on morphine and has used them both in association with ether by rectal administration. His enthusiasm for synergism is, or at least was, such that one of his recommended rectal injections contained no less than ten ingredients. The commonly used multiple anæsthesia of to-day, however, not only does not approach this degree of multiplicity but has a different aim. The purpose of the various ingredients mixed in premedication and anæsthesia is not solely—perhaps not even mainly—to reinforce one another's anæsthetic action; but rather to fulfil separate functions. One is used to avert psychical damage, another to reduce the amount of anæsthetic, and a third to promote recovery without unpleasantness. The first two objects are undoubtedly achieved by correct premedication, but some authorities maintain that premedication promotes the very after-effects to avoid which it is applied.

A weak point in multiplicity is that sometimes

[2] Minski, L., *J. ment. Sci.* November, 1938, p. 985.

an extra drug has to be added merely to counteract an undesirable action of one of the main ingredients. For example, morphine is often introduced into what has been described as the "anæsthetic cocktail" not because of any special action of its own but merely to counteract the restlessness likely to follow administration of barbiturates. Possible risk attending the intravenous injection of barbiturates and the strain of eliminating multiple anæsthetics were pointed out by Dr. Lerman in a letter we published on Nov. 26th. We cannot help thinking indeed that the use of several different agents, being in fashion, is being correspondingly overdone. At the same time it would be a mistake to undervalue the benefits of multiple anæsthesia. We well know that much mental suffering is prevented by drugs that are not in themselves sufficiently convenient as anæsthetics, and we know that admirable results are obtained with their aid.

CONTROL OF PUERPERAL FEVER

IN a Chadwick public lecture on Dec. 13th Dr. Leonard Colebrook said that puerperal fever (in its proper sense restricted to infection of the genital tract) was of two sorts, 40 per cent. being due to hæmolytic streptococci and mostly following normal labour, and 60 per cent. due to various other organisms and mostly following trauma during labour. The latter could not be prevented until trauma was prevented. The hæmolytic infections were the more serious and the more preventable. There were six or seven groups of hæmolytic streptococci, Group A causing 90 per cent. of cases. They were found in abundance in the vaginal discharges of a mother with puerperal fever but never in those of normal women. Therefore there must be an outside source. Sometimes the hæmolytic streptococcus had been transferred directly from another case, but this was unusual. It did not come from the mother's skin or intestine but almost certainly by air-borne dust or droplets. People with apparently healthy throats might be carriers. About 5–10 per cent. of people carried Group A streptococci and about the same proportion carried other organisms. The obvious remedy was to erect a barrier between throat and vagina—e.g., masks and strict antisepsis. But the effectiveness of antisepsis was limited by human frailty, especially in the mother's home. Our policy should be to deliver all women in a non-infected environment. During the last seven years at Queen Charlotte's Hospital the incidence of streptococcal infection had been 1 in 700 in hospital and 1 in 115 "on district." More deliveries should be done in properly planned and properly conducted maternity institutions. Properly planned meant separation from a general hospital and adequate segregation of women suspected of infection. Properly conducted meant an antistreptococcal service against spread of infection from mothers or to mothers from staff; precautions in engaging new staff, who should be swabbed and examined by an ear, nose, and throat specialist; careful investigation of all respiratory diseases (including coryza) in patients or staff—staff being sent off duty; and, most important of all, *immediate* vaginal swabs of every febrile puerperal woman.

Turning to the use of sulphanilamide, Dr. Colebrook said that at Queen Charlotte's they had used it for the last three years. Before its use the death-rate of puerperal fever cases had been about 20 per cent. After its introduction the death-rate dropped to 4·8 per cent. There was no evidence that the disease was becoming milder before the drug was introduced. Therefore the drop must be due to the drug. The evidence was that the drug could always cure experimentally infected animals. The effect on the mother's temperature also proved the efficacy of the drug. Dr. Colebrook illustrated this by temperature charts, including one of generalised peritonitis with streptococcæmia cured with sulphanilamide. No such case had previously been known to survive.

"HODGKIN'S DISEASE" OF THE STOMACH

FROM time to time cases of Hodgkin's disease localised to a single organ are published. These cases are often so atypical in their course and clinical behaviour that their identity must be suspect. In most it seems possible that the pathologist in using the term Hodgkin's disease has allowed his desire to make a diagnosis to override the alternative of admitting that he was faced with a cellular proliferation which he could not label. To the quandary "if it isn't Hodgkin's disease, what is it?" Robb-Smith [1] has offered a solution. He has shown that true Hodgkin's disease is only one of various types of proliferation affecting reticulo-endothelial tissue, and to these conditions he gives the name (originally suggested by Letterer [2]) reticulosis.

The force of these comments can be appreciated on reading a report by Madding [3] of "Hodgkin's disease" localised to the stomach. Six such cases were observed, gastrectomy was performed in all, and four patients were living 1–8 years after operation. The histological descriptions are no more typical of true Hodgkin's disease than are the age-incidence or clinical course, and it is hard to escape the conclusion that these cases were more probably examples of some other form of reticulosis or reticulosarcoma. The likelihood of this contention is increased by consideration of two other papers. Thompson and Howells [4] in 1935 reported four cases of primary "lymphogranuloma" of the stomach treated by gastrectomy and found ten others published which had been successfully operated on. The fourteen patients survived from 11 months to 14½ years. More recently Harney [5] has summarised the results of gastrectomy in fifty-eight published cases of "lymphosarcoma" of the stomach; in twenty-six, which were followed, nine died within 6 months and sixteen were well after 1–19 years.

These three series are clinically uniform; men are affected twice as often as women, and the age-incidence means are 49, 48, and 45 years for the three. The sole discrepancy lies in the histological interpretation. While morbid anatomists wrangle, the conclusion to be drawn by the clinician is that a gastric lesion occurs in middle-aged men which mimics carcinoma but has a better prognosis when gastric resection is possible.

Lieut.-General Sir HAROLD FAWCUS has been appointed colonel commandant of the Royal Army Medical Corps in succession to Lieut.-General Sir John Goodwin, who has resigned.

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[1] Robb-Smith, A. H. T., *J. Path. Bact.* November, 1938, p. 457.
[2] Letterer, E., *Frankfurt. Z. Path.* 1924, **30**, 377.
[3] Madding, G. F., *Proc. Mayo Clin.* Sept. 28th, 1938, p. 618.
[4] Thompson, T., and Howells, L., *Quart. J. Med.* 1935, **4**, 81.
[5] Harney, C. H., *Bull. Ayer clin. Lab.* 1938, **3**, 249.

UNIVERSITY COLLEGE HOSPITAL.—Particulars of the Bilton Pollard fellowship which is open to men students of this hospital will be found in our advertisement columns. The fellowship is of an annual value of £650, and candidates must hold the M.R.C.P. or F.R.C.S. and declare their intention of engaging in the practice of medicine or surgery.

CONTROL OF THE COMMON FEVERS

SMALL-POX

Reviewed by Dr. J. J. BUTTERWORTH, *late Medical Officer of Health for Lancashire*

TWO types of small-pox occur in the British Isles: variola major and variola minor. Variola minor is sometimes called alastrim, amaas, or para-smallpox, but it is officially known to the Ministry of Health as variola minor, and all other names should be discarded, for it is the same disease as variola major and differs only in virulence.

A memorandum[1] issued in September by the Ministry of Health gives the following information regarding the prevalence of small-pox in England and Wales during recent years (see Figure). In 1921 315 cases were notified, and in 1927 14,767. Notifications then fell slowly to 11,839 in 1930 and afterwards more rapidly, until in 1935 there were none. In 1936 12 cases were notified, the infection having been introduced from abroad. The total number of notifications in the years 1921–35 inclusive was 81,556, with 266 deaths.

Since 1920 the great majority of the cases were of the non-virulent type, a fact indicated by the low mortality, and variola minor has also been the prevalent strain in Canada, the United States, the West Indies, Brazil, and South Africa. The low virulence of variola minor renders the problem of control more difficult, but, as the memorandum points out, this is no justification for a policy of indifference. "Variola minor is not invariably mild or entirely innocent of complications and permanent disfigurement, with an extensive rash its victim is unsightly and repellent, and when epidemic it causes an amount of invalidity which cannot be viewed without concern by those entrusted with the care of the public health."

As medical officer of health for Lancashire, I had an opportunity of examining a large number of cases of variola minor and of directing the administrative measures for its control during the years of its greatest prevalence, 1921–34. The occurrence of small-pox in any sanitary area is no reflection on the administration. As Rosenau says in his *Preventive Medicine and Hygiene*, "Few of the acute infectious diseases show such a complete independence of conditions such as race, climate, soil, age, sex, occupation and sanitary surroundings as does smallpox. Smallpox spares neither the high nor the low, the rich nor the poor, the clean nor the dirty, the wise nor the foolish, the good nor the bad." It must be admitted, however, that once it has gained a footing overcrowding and unpreparedness for its control favour its spread. Universal vaccination excludes it quite definitely, but the fight for compulsory vaccination in this country has been fought and lost; and vaccination, if it is to protect the whole population, must be repeated at suitable intervals in every member of the population. This is an ideal that is never likely to be attained, and experience has proved that if the sanitary authority is well prepared to deal promptly with an outbreak the spread of the disease can be effectively controlled.

[1] Memorandum on Smallpox. London: H.M. Stationery Office. 1938. 2*d*.

Diagnosis

The infrequent opportunity of seeing patients with this disease makes it very difficult for the younger practitioner to-day to diagnose it with confidence. Its manifestations are fully described in the text-books, but all medical members of public health staffs should try to see as many cases as possible. They will learn more from the careful examination of cases than from any text-book description. I purpose to mention here only such matters as personal experience impressed upon me as being of outstanding importance.

VARIOLA MAJOR

Few medical men are likely to see variola major in this country, for it is now very rare. The incubation period is 12–14 days, and the onset may simulate that of influenza, with severe pain in the head, back, and legs, rigors and high temperature. Some cases have a prodromal rash, which may be erythematous, urticarial and petechial, or hæmorrhagic. Petechial rashes indicate a severe attack. A case with a prodromal hæmorrhagic rash of the purpuric type, usually seen in the region of the pubes, is almost always fatal on or about the third day of the invasion. The typical focal eruption appears first as macules, which in 24 hours become papular and on the third day of the eruption begin to become vesicular. Within 24 hours of the appearance of the rash the early toxæmic symptoms and fever may have completely disappeared. By the fourth or fifth day after its appearance the eruption is completely vesicular; the vesicles gradually become pustular and by the eighth day pustulation is complete. The pustular or suppurative stage is accompanied by a secondary fever which, according to the severity of the attack, may last from ten days to a fortnight.

VARIOLA MINOR

The invasion stage of variola minor is similar to that of variola major, but is usually, though not invariably, less severe. The distribution and course of the eruption are the same, but the rash is usually less profuse and sometimes very sparse indeed, and the secondary fever is much less. In the diagnosis of small-pox the distribution of the eruption is of extreme importance and I therefore discuss it here in some detail.

It is most important to have the patient stripped, so as to see the complete picture presented by the eruption. In some cases of variola minor the rash may be so scanty as to call for very careful consideration. Even the mildest cases, however, illustrate the classical point, that the distribution is centrifugal—i.e., there is more on the face and limbs than on the trunk. In my own experience the eruption usually first appeared on the forehead, near the roots of the hair, and in some instances simultaneously on the exterior surfaces of the wrist or hands. I found the matured eruption distributed as follows: on the face, forehead, prominence of nose, and cheek-bones; occasionally on the ears and lips; at times (even in mild cases) on the scalp; on the mucous membranes of the mouth and fauces. On the neck, the lines of the sternomastoid were picked out, but the anterior and posterior triangles of the neck were avoided. On the arms, the rash was more profuse on the forearms and hands than on the upper arm and usually more on the extensor than on the flexor

surfaces. The antecubital fossæ were usually avoided and the axillæ were free. The distribution on the legs corresponded to that on the arms. On the trunk, the eruption was usually much less profuse than on the limbs and face. There was always more in the scapular than in the lumbar regions. On the front of the chest more was found on the upper part than on the lower; and there was more on the chest than on the abdomen. I have never found the eruption in the hollows of the orbit or just below the ears. It is well to remember that points of pressure or irritation, such as may be caused by garters, braces, and so on, may produce the eruption in unusual situations, thus disturbing its normal bilateral symmetry.

In *varioloid*, that is, variola major modified by vaccination, the distribution of the rash does not differ in any essential from that in variola major. A recent and successful vaccination, especially in children, is very strong presumptive evidence against small-pox.

CHICKEN-POX

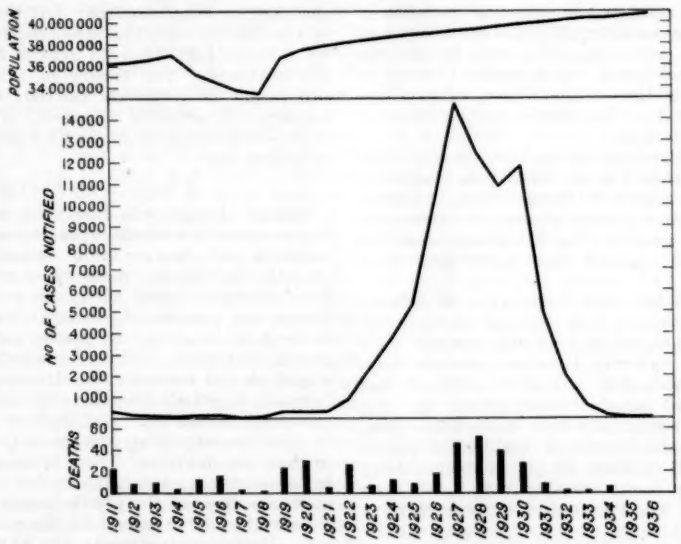
The disease with which small-pox is most often confused is chicken-pox. Chicken-pox is often mistaken for small-pox and small-pox for chicken-pox, and this is especially true in variola minor. No one can attain confidence in the diagnosis of small-pox unless he is expert in the diagnosis of chicken-pox. Practitioners should therefore examine carefully as many cases of chicken-pox as possible. The usual incubation period of chicken-pox is 14–17 days, but it is not very infrequently 21 days and extremes of 11–23 days have been recorded. The incubation period of variola major is 12–14 days, but in people who have been vaccinated some time before, 14–16 days is not unusual. In variola minor incubation periods of 18, 20, and even 21 days have been observed.

In children the rash of chicken-pox appears on the first day of the disease. In adults pyrexia, headache, and shivering may precede the eruption by two days. A bright red erythema may precede the vesicular rash and may be mistaken for scarlet fever. In the differential diagnosis the distribution of the rash is of primary importance. The extremities are usually spared in chicken-pox and the eruption is thickest on the chest and back, where it appears first. It may invade the limbs from above downwards but is usually slight on the lower parts of the arms and legs. The eruption does not spare the axilla and it is unusual for it to show any special incidence in ridges, pressure points, or irritated areas. It comes out in successive crops, so that papules, vesicles, and pustules may be found at the same time in a fairly small area.

When small-pox occurs in a district it is a useful precaution to make chicken-pox notifiable, but this is quite futile unless every case of chicken-pox notified is visited by a medical man experienced in the diagnosis of small-pox and chicken-pox.

OTHER ERUPTIONS

Many chronic skin conditions, especially when combined with intercurrent febrile illnesses such as influenza, catarrh, or rheumatism, may be mistaken for variola minor. Careful inquiry as to the duration of the eruptions is necessary, but the possibility of small-pox in a patient with, for example, chronic acne may sometimes cause difficulty. Syphilis has been confused with small-pox but should be relatively easy to differentiate. Other diseases which may have to be distinguished are scabies, impetigo, lichen urticatus, erythema papulosum, psoriasis, bullous eruptions, and septic or pustular dermatitis.



Incidence of small-pox in the years 1911–36. Based on the table in the Ministry of Health memorandum.

The general practitioner rarely has the opportunity to become expert in the diagnosis of small-pox, and he should seek the help of the medical officer of health whenever there is the slightest suspicion that a patient may be suffering from the disease.

Administrative Measures

Every authority, either by itself or in combination with other authorities, should provide adequate hospital accommodation for the isolation of cases of small-pox. In a disease which varies so much in its incidence it is very difficult to estimate with any accuracy the number of beds required. Now that motor transport is available, the establishment of small-pox hospitals to serve the areas of a number of authorities is a sound administrative procedure.

As soon as the diagnosis of small-pox has been confirmed by the medical officer of health, the patient should be removed to a small-pox hospital. Particular care should be taken to ascertain that the ambulance driver and others who assist in the removal of patient or infected articles are first protected by revaccination. Disinfection of the infected house and its contents, and steam disinfection of all infected clothing and bedding, should then be carried out.

CONTACTS

All the inmates of the house should be closely questioned. By this means a list of contacts, as

complete as possible, should be obtained under four headings:

(1) Intimate contacts living in the same house. (2) Persons visiting the house, such as tradespeople, milkmen, insurance agents, and the like. (3) Persons who have been in contact with the patient outside the house, including fellow workmen. (4) All relations living in the town, whether there is a history of contact or not.

At the hospital in which he is isolated the patient should be interrogated as to his movements about the twelfth to the sixteenth day before the onset of his illness, and also as to his or her knowledge of cases of small-pox previously notified, or of cases said to have been chicken-pox. In one instance in my experience six cases of small-pox were discovered by questioning the patient regarding cases of chicken-pox of which he had heard. It is useful to read to each new patient a list of the names of previous cases; the patient may remember having been in contact with one of them.

Besides being interrogated as to contact, the inmates of the patient's house should be medically examined and questioned as to recent illness. Staining on the face, and more particularly on the arms, has been noticed three months after the patient had the rash, and previously missed cases have thus been detected.

The routine procedure with contacts is as follows. Note is made of the date and place of contact, the nature and place of occupation of contacts and their vaccinal condition. All who have not recently been vaccinated or revaccinated should be offered and strongly urged to accept vaccination. In my experience they do not usually need much persuasion. Having regard to the prolonged incubation period in variola minor, all contacts should be visited daily for at least twenty days, whether they have been vaccinated or not. The vaccination or revaccination of contacts within three days of exposure may usually be depended upon to prevent the spread of small-pox from such persons. Vaccinations performed after three days have their value in that they may serve to protect against subsequent infection. Such vaccinated contacts, however, often necessitate much medical supervision. They may give rise to further cases through small-pox being more or less masked as a result of vaccination, the prodromal illness being mistaken for the vaccinal reaction; or the difficulty of diagnosis where the eruption is modified by the vaccination may lead to an actual case of small-pox being overlooked.

The sanitary inspector or health visitor should report immediately to the medical officer any contact or contacts who, as the result of the daily visiting, are found to be in any way ill and such persons must be visited as soon as possible by one of the medical officers dealing with the epidemic. All medical practitioners in the area should be informed of the occurrence of small-pox and the medical officers of health of contiguous areas should be acquainted with the details. The names and addresses of all contacts in other areas should be notified to the medical officers of health of such areas.

The occurrence of small-pox should never be concealed from the public and, if cases increase in number, posters should be issued recommending vaccination or revaccination and giving the names, addresses, and surgery hours of the public vaccinators. It is frequently useful and sometimes necessary to open special vaccination centres. Common lodging-houses should be visited daily and all cases of illness in them must be immediately notified to the medical officer of health who will arrange for them to be seen by a medical member of his staff.

The pursuit of contacts must be kept within reasonable limits. If for instance an infectious small-pox patient was found to have attended a cinema, it would be impossible to find out the names and addresses of all the other persons who were present at the same performance; but it would be wise to let it be known that such persons have been exposed to the risk of small-pox infection, and that by getting vaccinated at once they can protect themselves. Inquiry as to the origin of an outbreak is very important but often inconclusive. The disease may have been introduced through the medium of infected cotton, clothing, or other fomites; but too early acceptance of the theory that the infection has been conveyed by fomites may tend to retard the suppression of the outbreak. The theory of infection by fomites can rarely be definitely proved, whereas persistent inquiry, if properly directed, will often provide evidence of recent contact with a previously concealed or missed case.

SCHOOLS AND FACTORIES

School closure will rarely be required, but it is the practice to exclude actual school contacts. Such contacts as have been successfully vaccinated recently enough to render them reasonably immune from infection could safely be permitted to attend school, but parents of other children would be likely to keep them away and public confidence would be greatly disturbed. If a child who has been attending school should contract the disease, an effort should be made to get all the other children in the same class or school vaccinated. Children should be given forms to take home inviting parents to give written consent to their vaccination. There is usually little difficulty in obtaining consent. A public vaccinator or a medical officer of the public health staff and a nurse should attend the school for the purpose of vaccinating. During an epidemic, the head teacher of each school should send in a daily list of absentees, giving, if it is known, the alleged cause of absence. All absentees should be visited by a sanitary inspector or school nurse. Children can be kept under supervision when attending school much more easily than when they must be sought in their homes, and school closure is therefore inadvisable unless a considerable number of scholars become infected.

Where, in mild cases, the patient may have infected one or more of a very large number of workers, say in a factory, reasonable control may be gained by the management submitting a daily list of absentees. Visits will be made to ascertain the cause of absence and any suspicious illness will be kept under strict observation.

EXTRA STAFF

Even a small outbreak of small-pox involves a great deal of work for the public health staff, and a temporary increase of personnel may be found necessary. Apart from medical supervision, home visiting, and vaccination, a considerable amount of clerical work is involved in the daily records which must be kept under various headings. A spot map has to be prepared showing the situation of houses, schools, and works where cases have occurred, with the cases numbered in the order in which they arose, and a key list giving brief particulars of each case has to be kept up to date. A really efficient clerical staff is therefore of great importance in the successful control of an outbreak. It is essential that, before they are allowed to take any part in the work, every member of the staff should be revaccinated.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Divorce for Insanity—What is Continuous Detention?

THE system of "provisional discharge" from English mental hospitals has caused much misgiving in the Divorce Court. Under the Matrimonial Causes Act of last year, sometimes called the Herbert Act, the incurable insanity of husband or wife is now a ground for divorce, provided that the insane person has been continuously under care and treatment for the past five years. A person of unsound mind is deemed by the Act to be "under care and treatment" while he or she is detained in pursuance of any order under the Lunacy and Mental Treatment Acts. If the patient is provisionally discharged and is allowed out of hospital for long periods of absence "on trial," can it be said that there is a detention order in force? And, if there is a valid detention order, can the patient be deemed to have been continuously detained for five years if during that period he or she has been absent for many months? These two questions were answered in a reserved judgment delivered last week by the President of the court in Shipman *v.* Shipman. The court was satisfied that the wife was incurably insane. The first order for her reception had been made in 1915 and had been discharged in 1924. The discharge, said Sir Boyd Merriman, did not involve any finding that she was recovered. The renewal certificate in 1922 had showed her to be suffering from delusional insanity. That disease, he remarked, might assume very aggravated forms or might be of the comparatively mild type with which Mrs. Shipman was afflicted. The court, if satisfied that unsoundness of mind existed in an incurable form, was not concerned with the degree of insanity except in so far as that was to be inferred from the one test prescribed by the statute. A spouse might be a raving lunatic of the worst description and hopelessly incurable; but such unsoundness of mind was not a ground for divorce unless it had resulted in the prescribed detention or treatment. Conversely a spouse whose incurable unsoundness was of a very mild type would come within the statute if the statutory test of "care and treatment" was fulfilled. It was all the more incumbent on the court to be sure that the statutory test was satisfied in law.

In July, 1926, there was a fresh reception order. Once at least before 1924 and from time to time after 1926 the patient was released at the instance of her sister and against the wish of her husband. One of these occasions was on Dec. 21st, 1933, when the visitors signed an order for the provisional discharge of the patient on trial from this mental hospital "until we make further order or until the relapse of the patient whichever should take place." The medical officer certified that the patient was in a fit state to be provisionally discharged. The Lunacy Act says nothing about provisional discharges, but it does provide (by Section 55 (1)) that any two visitors of a mental hospital may, with the advice in writing of the medical officer, permit a patient in the hospital to be absent on trial so long as they think fit. His Lordship accepted the Solicitor-General's argument that, when the patient was provisionally released, she was absent on trial within the meaning of Section 55 (1). The court thus found an answer to the first of the two questions in the case. There was a reception order in force at all material times.

The court had now to answer the second and more important question. In the past five years Mrs. Shipman had been allowed out of hospital for periods amounting in all to nearly a year. Did these absences break the continuity of the prescribed five-year period of care and treatment? Was she continuously detained merely because, during her absences, she was liable to be detained if and when the reception order was called out of abeyance. Sir Boyd Merriman mentioned four varieties of permitted absence for a patient like Mrs. Shipman. First there might be a temporary outing, unattended, during the time of day when patients were not locked in. Secondly, there might be leave of absence granted by the manager under the regulations, for three nights or four days. Thirdly there might be absence on trial for a definite period, and fourthly absence on trial for an indefinite period. He was prepared to hold that in the first and second cases detention would not be interrupted. Routine outings or occasional leave of absence for three nights or four days under the regulations might be disregarded under the legal principle *de minimis non curat lex*. But he considered that, if detention was in fact requisite, absence on trial for prolonged and indefinite periods must be on the wrong side of any reasonable line which could be drawn. Liability to be detained could not be the same thing as actual detention under an order which was being enforced. The President added that he found strong support in the House of Lords decision in Harnett *v.* Bond for the view that periods of absence on trial were not periods of detention within the meaning of the Lunacy and Mental Treatment Acts. He dismissed the husband's petition and granted the wife her costs.

PROSPECTIVE AMENDMENT OF THE HERBERT ACT

Sir Boyd Merriman referred, in passing, to the corresponding law of Scotland. Section 6 of the Lunacy Acts (Scotland) Amendment Act of 1866 says that, in the case of a patient's temporary absence or escape from a mental hospital, the reception order shall remain in force as though the patient were still within the hospital, provided that he or she returns or is brought back within 28 days. Mrs. Shipman was absent for longer periods than this, so that, under the Scottish law, the requisite continuous reception order would have been interrupted fatally. There was no such provision in the English statutes. The Herbert Act admittedly requires amendment. Parliament will have to consider whether cases like that of Shipman *v.* Shipman should not be met. A remedy has been given to husband or wife where the other party to the marriage is incurably insane and has been under continuous care and treatment for five years. If the petitioning spouse desires to obtain the remedy, it is now apparently vital to his or her interest that the insane party should never be released from the hospital for longer than four days at a time in five years. Mrs. Shipman was released in order to stay with her sister. Relatives of the insane party have it in their power to defeat the petitioning party's right to a divorce by taking the patient out for five days. On the other hand, if an incurably insane wife or husband is to be deemed continuously detained while absent on trial from hospital for indefinite periods, then he or she could be released for possibly four years out of the five and could live at home with the sane partner as man and wife and

yet at the end of the five years the sane partner would be entitled to a divorce.

Another point in the Herbert Act which obviously requires consideration is the omission, brought to notice in another case last week, of any provision allowing detention in a Scottish mental hospital to be reckoned as continuous detention under care and treatment for the purpose of a divorce in England. The Scottish Act, passed this year, does not overlook this point. It deems a patient to be under care and treatment as insane if, amongst other things, he or she is under care and treatment within the meaning of the English Act. The English Act, whereof Mr. A. P. Herbert has himself written the history in "The Ayes have it," was, to put it bluntly, a rush job. The Scottish Act, passed almost exactly a year later with much less excitement, had time to study the points at which improvement was possible. Lastly some alteration of the lunacy laws is understood to be in contemplation as a preliminary to bringing up to date a code now nearly fifty years old. Mental treatment has not stood still since the passing of the Act of 1890. In any such amendment it may be possible to regularise the practice of "provisional discharge" which the Shipman case has brought to judicial notice. Sir Boyd Merriman was evidently surprised to find anomalies in the administration of a branch of law with which, since it closely affects the liberty of the subject, the public is conspicuously concerned.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

MEGALOBLASTIC ANÆMIAS

UNDER the auspices of the Honyman Gillespie trust Prof. L. S. P. Davidson last week delivered a lecture in Edinburgh on the mechanism of megaloblastic blood formation. He considered only the anæmias associated with a blood picture of the Addisonian pernicious type. Such anæmias may result from deficiency of food factors or of gastric secretion, or from diminished intestinal absorption; they may be constitutional or acquired, and may be permanent or temporary.

Addisonian anæmia is the classical example of a macrocytic anæmia due to deficiency of the specific gastric enzyme, a deficiency which is constitutional and permanent, requiring life-long substitution therapy. There is no inflammatory gastritis and no nutritional defect, but a diffuse atrophy of the wall of the stomach especially affecting the mucous membrane of the fundus. The specific enzyme appears to be secreted by the glands in the fundus and not in the pyloric part as seems to be the case in hogs. That more widespread intestinal deficiency exists is shown by those cases which fail to respond to oral liver or liver extract but respond to the extract given parenterally. In pernicious anæmia of pregnancy there is a latent and partial constitutional defect which is temporarily accentuated by the demands of pregnancy and by the depression of gastric secretion so characteristically found then.

In some instances inhibition of secretion of the gastric enzyme by disease or drugs may be followed by the development of Addisonian anæmia—acquired pernicious anæmia.

A young man, who had been an alcoholic and had suffered from malaria, developed a macrocytic anæmia indistinguishable from pernicious anæmia, with histamine-fast achlorhydria. Under oral liver therapy not only did the blood return to normal but hydrochloric acid secretion was restored and intrinsic factor was shown to be present in the gastric juice on biological test three months later.

Tropical macrocytic anæmia, essentially a dietary deficiency and often complicated by pregnancy, may be cured by the administration of autolysed yeast. Wills and Evans have shown that highly purified liver extracts are less effective in treatment than the cruder extracts, and have suggested that the anæmia is due to a deficiency of some unknown food factor other than Castle's extrinsic factor.

Macrocytic anæmias with the Addisonian blood picture may be associated with intestinal impermeability, intestinal hurry and watery diarrhœa, or with fistulæ and short circuits.

In one case jejunal anastomosis was followed by the development of an anæmia of the pernicious type with histamine-fast achlorhydria and classical pellagra. There was little improvement with parenteral liver therapy, but the administration of an almost entirely protein diet was followed by cure of the anæmia and of the pellagra and a return to normal hydrochloric acid secretion.

In another patient previous bacillary and amœbic dysentery was followed by mild prolonged fatty diarrhœa without organisms in the stool. A flat glucose-tolerance curve suggested deficient intestinal absorption. A progressive macrocytic anæmia of the pernicious type developed, with atrophy of the mucous membrane of the tongue and achlorhydria four months after gastric analysis had shown hyperchlorhydria. Latent tetany was also present. Parenteral liver, yeast, and iron therapy were unavailing. Transfusion was necessary, but provided only temporary relief. Administration of a high-protein low-fat diet with calcium was followed by a steady improvement in the blood and the return of hypersecretion of hydrochloric acid.

Prof. Davidson suggested that these were examples of anæmia due to lack of some unknown factor found in animal protein which is necessary for the formation of red cell stroma. Histamine-fast achlorhydria is not invariably a permanent feature and may sometimes be overcome by relieving the dietary deficiency. Such deficiency is frequently one of absorption and may be of a multiple nature affecting not only protein but also iron, calcium, and vitamins, and account must be taken of all of these factors in attempts to cure the deficiency.

Some megaloblastic macrocytic anæmias are due to failure of storage or synthesis of anti-anæmic factor in diseased livers. Cirrhotic livers are found to be deficient in their content of this factor. Since such anæmias, with pictures identical with pernicious anæmia, often fail to respond in maximum degree to parenteral liver therapy, the normal liver may be concerned in some final synthesis of the anti-anæmic factor necessary for its conversion into a utilisable form. Yet in patients with liver disease and macrocytic anæmia the prognosis is essentially that of the liver condition, since improvement in the blood following specific therapy is not associated with improvement in the state of the liver. Since the prognosis may depend so much on the state of the liver it is necessary to make the fullest investigations of the hepatic function. Liver function tests are often negative even in advanced cases of cirrhosis but there may be gross reduction in total plasma proteins with inversion of the albumin-globulin ratio. The finding of low plasma proteins in the absence of albuminuria is strongly suggestive of liver insufficiency.

PUBLIC HEALTH

MEASLES IN LONDON

1935–36

THE fifth of a series of special reports upon the biennial epidemics of measles in London, prepared under the direction of Sir Frederick Menzies, deals [1] with the epidemic of 1935–36 which, like its two immediate predecessors, made a late start. The cases reported from schools did not attain formidable numbers until the first quarter of 1936, the peak being reached during the last week of March (2681 cases in the schools); thereafter decline in incidence was rapid and the epidemic flickered out "some time during August." Owing to the steady fall in the school population within the L.C.C. area, the number of school cases (32,690) was lower than in any of the five preceding epidemics. In 1925–26 approximately 10,000 more cases (42,598) were reported from the schools, but the attack-rate of 63 per 1000 scholars was the same as in 1935–36. These fluctuations in attack-rates in succeeding epidemics in London, considered in relation to the steady fall in the numbers of scholars (nearly 160,000 in the decennium), are worthy of close epidemiological and sociological study. In all, from November, 1935, to the end of August, 1936, some 54,000 cases of measles came to the notice of the medical officers of health of the metropolitan boroughs; during the same period 593 deaths from measles were registered in London, a striking fall when compared with 904, 879, 1097, 1466, and 1133 over the same periods in five preceding epidemics.

No fewer than 13,171 measles patients were admitted to L.C.C. hospitals. Of these all save 28, too ill for removal, were admitted to the fever hospitals. Of the total of 13,171 patients, 507 died—a case-fatality rate of 3·8 per cent. compared with 5·5 per cent. in the preceding epidemic. The steps taken to deal with this large influx of measles patients, in addition to the other infectious diseases, are described in the report (p. 7). They were, of course, only possible to a body with the enormous resources of the L.C.C. In addition, the borough medical officers of health provided extensive facilities for home nursing and for the supervision of contacts in schools. Under various auspices, nurses visited 13,211 homes, entailing 43,326 visits, and 10,500 home contacts were kept under special supervision in schools. It is impossible to over-estimate the value of this work in securing early treatment for cases of measles.

The importance of segregation, by barrier or chamber-nursing, of children removed to hospital suffering from complications such as broncho-pneumonia or otitis media due to concomitant organisms (chiefly the hæmolytic streptococcus) is stressed in a contribution by Dr. E. H. R. Harries, who also emphasises the value of the open window in the management of broncho-pneumonia. Drs. M. F. Coveney and A. D. Dixon report upon the radiographic appearances of the lungs. They find that the changes after broncho-pneumonia were those described by J. L. Kohn and H. Koiransky (*Amer. J. Dis. Child.* 1929, **38**, 258) as occurring in uncomplicated measles, but usually more marked and persistent after all clinical signs had entirely subsided, and so suggestive of permanent damage. Obviously, as Dr. Harries comments, such children should be followed up in clinics in order that residual pulmonary conditions (fibroid lung and bronchiectasis) may be treated at an early stage.

SERUM PROPHYLAXIS

Dr. W. Gunn again reports upon the use of measles antisera, including placental extracts, for prophylaxis. Some of the findings are perplexing, checked as they are by the unimpeachable statistical analysis of the data, carried out, as in previous reports, by Mr. W. T. Russell, F.S.S. Thus, it appears that the duration of the exposure-injection interval had a negligible influence upon the results; indeed, when convalescent serum was used "the results (the desired results) improved progressively as the interval was prolonged—findings in sharp conflict with those recorded in the immediately preceding epidemic." That "the duration of exposure bears no constant relationship to the probability of attack, a somewhat unexpected finding," may, it is suggested, "be due to early loss of infectivity in the primary infecting cases." This is not a very convincing explanation. It should be read in conjunction with the conclusions of S. Karelitz and B. Schick (*J. Amer. med. Ass.* 1935, **104**, 991). These observers conclude that hospital and institutional wards are usually inadequate for the study of measles prophylaxis because of the uncertainty and difference of the intensity and duration of the exposure of susceptible children. They believe that the evidence indicates rather clearly that the degree and frequency of infection with measles within a few days determines in a large measure whether the disease will develop in susceptible children, and they insist that no serum should be declared effective unless tried under the severest conditions—viz., thorough and repeated exposure to sick siblings at home or under comparable epidemiological circumstances.

In the series reported by Dr. Gunn 1636 individuals were injected, 1289 receiving adult serum. Of the total number, only 42 were injected in private houses. Although the results, as compared with those recorded in previous epidemics, were inferior, adult serum may be relied upon under institutional conditions to protect some three-quarters of those injected, and to attenuate the attack, where this is desired, in about one-third; this result is surprising, since attenuation with adult serum is usually more reliable than prevention. The apparent falling off in the potency of convalescent serum is extraordinary. The protection rates in successive epidemics were 1935–36, 72·3 per cent.; 1933–34, 80·8 per cent.; and 1931–32, 90·7 per cent. This leads Dr. Gunn to the conclusion that "it is not yet possible to reduce the serum prophylaxis of measles to a rigid mathematical formula, owing to the number of biological variables involved." It is clear that some imponderable but variable factors have produced a disconcerting effect upon data compiled, as they must have been, by many hands under diverse conditions.

[1] London: P. S. King. No. 3384. 1s.

MEDICAL REGISTER: RESTORATION AFTER NON-PENAL REMOVAL.—At a recent meeting of the executive committee of the General Medical Council it was reported that the names of the following practitioners had, on fulfilment in each case of the prescribed conditions, been restored to the Register, from which they had been erased under Section 14 of the Medical Act, 1858: John L. Aymard, William Booth, Philip Coleman, John T. Heffernan, Arthur L. Heiser, Francis P. Kennedy, Gerald G. King, Hilda I. Lanceley, Francis H. Napier, Catherine Portley, William W. Stuart, Vincent Walsh, and Walter P. Yates.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM AN ANATOMIST

III

IT is possibly the business of reflecting on the painful immaturity of medical students that has set me to puzzling over the question of immaturity in general. But even when one considers immaturity in the abstract, thoughts on medical students again intrude themselves, for it is generally accepted that one duty of the teacher is to attempt to lick his immature students into shape. And then Sir Thomas Browne comes in by saying: "That a Bear brings forth her young informous and unshaped, which she fashioneth after by licking them over, is an opinion not only vulgar, and common with us at present, but hath been of old delivered by ancient writers." But after all, though Sir Thomas Browne could readily refute a vulgar error, he could not well deny that bears *do* lick their cubs and that baby bears are born ridiculously small and immature, compared, for example, with the new-born guinea-pig. Yet, though they are born pathetically under-developed, little bears grow up, in the end, and become mature big bears. It is rather with the creatures that never grow up that my thoughts have been concerned; and there we leave the medical student, for these, like bear cubs, do somehow manage to grow up and then turn into mature medical practitioners.

* * *

There is no more remarkable revelation of the mysteries of birth to be had than that furnished by watching some of the little viviparous fish that are bred by modern aquarium enthusiasts. The mother swims about the aquarium and has but little apparent concern with the business in hand; and, as though by magic, little fish appear in her wake, baby-like only in size, for in all other things they seem to be perfect little reproductions of the adult. They appear to be born grown-up but small. Yet before their birth they passed through a stage of immaturity, which is seen in all its stark nakedness in their fellows that hatch out from eggs. They have merely concealed the stages of their transition by carrying them out in obscurity. There was a time when their gill slits were exposed gaps on the sides of their "necks," and were still uncovered by a gill operculum. At one time they had no swim bladders and instead of having bones—and being real bony fish or teleosts—their skeletons were made only of cartilage. Their tails at first had only one fluke instead of the two with which they were born, and they were covered with an epidermis in which the typical fish scales had not yet developed. They were, in fact, very unlike high-class bony fish and resembled tiny sharks. At one stage it almost looked as though they might turn out to be sharks; but then changes, typical of the dawning characters of the teleosts, were initiated and the elasmobranch likeness faded out by the development of new features superimposed upon it. It is here that the horrid spectre of the "biogenic law" stalks across the stage; but we will not permit it to intrude, for I fancy there is more intellectual satisfaction to be gained in regarding a shark as a permanent baby fish than in looking upon a herring as a grown-up one. Certainly the herring is the more finished product, though not necessarily therefore the better as an animal type. Sharks are of monstrous antiquity. Ever since Paleozoic times they have been swimming the seas in search of their prey. In the Devonian period, at an astronomically remote epoch, the sharks were fully perfected; and yet they have never managed to grow up, when being grown up is measured by the yard-stick of teleost specialisations. Considered as a fish, a shark remains infantile. We might even join with most zoologists in calling him primitive; but with more justice, I fancy, we might regard him as a permanent baby fish—one that has escaped the snares incidental upon growing up and has remained generalised and perennially young. For though the herring is a later product of the phylum of the fishes, and though it is far more specialised and perfected as a fish, no one not prejudiced by contemplation of the zoological scale of classification could describe it as being so grand a piece of Nature's handiwork as is the shark. In brain development the shark preserves potentialities that, in the herring, are lost for ever; in growth it knows few handicaps, for by remaining permanently infantile its growth period is prolonged. In every part of its body it demonstrates a better and grander ground plan of animal structure than does the herring. And here there is the parodox that the shark, ranked as a lowly member of its phylum, is far more reminiscent of the members of higher phyla than is the herring, exalted though it be by the systematist. The herring is indeed a very high-class fish, but destined always to remain so. But no shark need resent the indignity of being placed by the zoologist near to the bottom of its class; it can afford to scoff at the herring as being a hopelessly hide-bound product of phylogenetic senility without hope of advance. In this case between the elasmobranch and the teleost it may be said that the ancients did more justice than the moderns, for the mysterious chimæra, one of the most ancient sharks, which has survived from the incalculably remote Devonian period, was known in legend as the King of the Herrings.

* * *

Anyone who has gazed upon the Japanese giant salamander in its tank at the Zoo must have gleaned an impression of gigantic immaturity. Nothing more like a swollen baby amphibian could possibly be pictured. It appears as a gigantic tadpole that, having failed to shed its tail and become a decent giant frog, has fallen short of the fulfilment of its proper phylogenetic destiny. The giant salamander takes low place in the systematic ordering of the amphibia and, indeed, considered as an amphibian, is strangely primitive. Yet, as Prof. George Murray Humphry showed, it possesses anatomical potentialities long since obliterated in the perfected frogs and toads. For among all the over-specialised and hopelessly out-worn types the frog is a conspicuous failure; thus far can the frog go but no farther. Cryptobranchus is a beautifully generalised and overgrown baby amphibian. Its ancestors flourished in the distant Miocene period and it differs from them only in the most trivial details. Moreover it was one of its ancestors that, when first discovered, was acclaimed by Scheuchzer as Homo diluvii testis. The giant salamander might be regarded as the

shark amongst the amphibia and, just as the shark can afford to laugh at the specialised herring, so is the cryptobranchus free to ridicule the frog as the tadpole that took the wrong turning.

Among the living reptiles there is also a permanent baby, but not a particularly large one. The one great vice of specialisation that was indulged in by the early reptiles was the business of growing gigantic and this was the ruin of many a fine stock. The reptilian permanent baby avoided this snare and remained of only moderate size. Despite the way that the tuatara of the islands of New Zealand dreams away its life in a burrow, in company with a petrel, it is an animal of remarkably intellectual appearance and is withal superior in every way to the highly specialised, but phylogenetically exhausted, modern snakes. The sphenodon is a true reptilian aristocrat, but little altered from his aristocratic Jurassic ancestors; young in the dawn period of reptilian supremacy and immature as a reptile even until this day.

* * *

It is probable that up to this point my reflections upon phylogenetic immaturity would incur no more than a mild contempt from authority. Minor presumptions here and there might be pardoned as being due to the fact that my reflections upon immaturity are the harmless and effete offspring of a generalised, rather than a specialised, training. It may be that I too am a shark and that these things should properly be discussed by herrings.

When we come to the question of baby birds, I know that charges of gross ignorance will be laid against me. Birds are distinguished by the possession of flight feathers and by their ability to fly. It is true that some birds cannot fly, and that most of these have lost the power of flight once possessed by their ancestors. But there is a whole order of flightless birds concerning which there may be some doubt. Have the ostriches, rheas, emus, and the others of their kind degenerated and so lost the power of flight or are they primitive and have they never learned to fly? The orthodox answer is that the ratite birds are degenerates, since the ability to fly is the hall-mark of true avian development. This question can only be decided by agreement on the original method by which birds gained a mastery over the air. Did they learn to fly by climbing trees in the guise of transition reptilian forms and so launching themselves into the air when feathers had been developed to sustain them? Or did they learn to fly by running upright on their hind limbs, the while their fore limbs, clothed with immature feathers, sought to aid the rapidity of their progress by beating against the air? This question might be debated endlessly. Here we will not debate it, but will be content to differ from the accepted thesis that the ratite birds are degenerate and have lost the power of flight once possessed by their ancestors. One general observation may be made in defence of this position. There is no member of any vertebrate phylum that is known to have learned to fly by the method of launching itself into the air from an elevation. Flying frogs, flying lizards, flying opossums, flying squirrels, flying lemurs, and all the rest of them are not flying animals in the sense in which the perfected birds are flying animals. The creature that by virtue of climbing to a height launches itself into space never learns to fly; it learns only to glide and its glides are ever downward. If the birds learned to fly by leaping from the tree tops they are alone among the vertebrates in succeeding in the enterprise and thereby accomplishing true flight. But there is an alternative to all this which will come readily to the mind of anyone who has watched young chickens running to their mother in response to her clucking. The picture needs no details to make it familiar and realistic. Each chick gains all the benefit that can be afforded by the movement of little wings, clothed, so far, only with immature down feathers. It is a foot race, but the developing wings give added speed. Later on, when flight feathers have been developed in some, the race for food will be won by those that can succeed in making a partial flight out of what was previously only a foot race, aided by flapping but immature wings. Possibly, then, avian flight originated in some such way. We might picture a bipedal creature on the line of avian ascent (and there were many such) that, becoming bird-like in acquiring primitive feathers instead of the ancestral scales, strove to aid its running by the flapping of its fore limbs. And here we are straight back to the contemplation of the ostrich and its kind. What sort of evidence is there that the ostrich and the other great ratite birds ever flew or that they have degenerated from flying ancestors? In their anatomy there is no jot of evidence to justify this supposition. It is far more likely that the ostrich—primitive and generalised as it is—is a living representative of the progenitors of the modern specialised birds. It is far more likely that birds originally learned to fly, just as the chicken does to-day, by endeavouring to hasten along and launch themselves by movements of the fore limbs, when these fore limbs had acquired a growth of feathers of some sort. And this is exactly what the ostrich and the emu and the other ratite birds do. But the ostrich cannot fly, nor can the rhea or the emu, still less can the cassowary or the apteryx. And if we ask why the ostrich cannot fly, the answer is plain. The ostrich is a perennial baby bird; it is a stereotyped and permanent chicken never developing the adult flight feathers that are necessary for flight. The ostrich, we may say, is to the humming-bird as the shark is to the herring. It has not attained to the specialised perfections of the avian phylum, but nevertheless is vastly superior to the humming-bird as an animal type. In the anatomy of the ratite birds there are all sorts of hints and forecasts of higher things. An ostrich is far more like a mammal in a score of details of its anatomy than is the humming-bird. Its brain, its urogenital system, its respiratory system, and a host of other such things show a kinship with higher things that is altogether lost in the flood of avian specialisations that have overwhelmed the humming-bird. We are faced once again with exactly the same dilemma as before. The ostrich, lowest of its phylum by any zoological classification, is the highest by virtue of its potentialities and its happy preservation of a generalised condition. The ostrich may well scorn the brilliant and perfected humming-bird as being the victim of a blind-alley development and so having become a very perfect bird—and nothing more.

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It would seem then that we have, in considering this question of immaturity, come across a mixed lot of permanently immature creatures that have certain well-defined characters in common. The shark, the giant salamander, the tuatara and the ostrich represent the babyhood of their respective phyla. By the systematist they are placed without hesitation at the bottom of their classes, since they are primitive in type and so lack the finished specialisations characteristic of their class. By the anatomist they must be regarded with considerably more respect, since in the broad outlines of their

structure they show far more possibilities and far more forecasts of higher things than do the most perfected members of their phyla. A shark is more like a giant salamander than a herring is like a frog and both are more akin to the tuatara than either the herring or the frog is akin to the snake; and in the same manner the argument can be extended to embrace the ostrich and the humming-bird.

* * *

If we may be forgiven these speculations in phylogenetic immaturity we may proceed to follow out the line of thought to which these reflections have given birth. But I fear that the sanction of authority, perhaps doubtfully extended so far, will be definitely withdrawn from the logical outcome of these thoughts.

Suppose we carried our search for baby animals from the lower phyla and seek among the higher mammals for an animal that appears to be conspicuously immature when compared with other members of its phylum, what sort of characters should we look for? We should look for a generalised creature that had not attained to any of the specialised distinctions that constitute the hall-mark of the typical mammals. We should look for a mammal that had a maximum of primitive vertebrate and primitive mammalian characters that had not become altered or lost by subsequently attained mammalian specialisations. Our primitive mammal should therefore possess the five primitive digits on both fore and hind limbs. It must have avoided developing on these five primitive digits any claws, talons, or hoofs typical of various mammalian specialisations. It must have refrained from developing horns or antlers or any of the other excrescences which are characteristic mammalian developments. It should have retained a well-developed clavicle from its pre-mammalian heritage and it should have avoided any very great specialisation in diet and so have retained a generalised mammalian dentition. Just as a permanently infantile bird retains its down and fails to develop the adult flight feathers, so should the permanently infantile mammal retain its down hairs and fail in the development of much adult or definitive hair. It should moreover demonstrate in its anatomical intimacies many so-called atavisms and preserve certain strangely primitive vertebrate characters in a make-up typical of a mammal. We should not expect this mammal to rank among the smaller members of its class and we should expect its growth period to be a prolonged one. The inclusion of all these characters is fully justified by our experience with the shark, the giant salamander, the tuatara, and the ostrich. But their inclusion limits our field of selection, which becomes peculiarly narrowed when we demand five fingers and toes and no talons, hoofs, or horns. When we demand a clavicle it becomes still more limited, for our field of search is reduced practically to the Primates. When we postulate that down hair should not be greatly replaced by adult definitive hair we limit our field among the Primates practically to the choice of Man.

* * *

Zoologists may well disagree with the thesis that Man is the great undeveloped baby among the mammals, and that he ranks in his phylum as the shark does among the fishes. But those who feel shocked at this finding should remember that Prof. Bolk, many years ago, enunciated his thesis of infantilisation or fœtalisation to account for the very peculiar distinctions of human bodily organisation. He suggested that human adult characters were due to the retention of fœtal or infantile mammalian characters into adult life. Many anatomists and palæontologists have employed, distorted, or rejected this thesis as suited them best. Nevertheless in its main contentions it is not to be denied. If Bolk had come out into the open and insisted that man was the permanent baby mammal, just as the shark is the permanent baby fish, or the ostrich is the permanent baby bird, I for one would have heartily agreed with him. But probably that is asking too much of anyone living in a world in which man is universally regarded as the supreme product of mammalian evolution. And yet, on anatomical grounds, it is as easy to defend this thesis as that of the immaturity of the shark. The horse is a perfected and specialised mammal, corresponding to the herring among fish, and conversely man is the most generalised and unspecialised mammal, corresponding to the shark among fish. No one having knowledge of human and equine anatomy could possibly gainsay such a statement. But though on reflection Bolk's theory that man attained his characters by the retention of fœtal or infantile phases might be accepted, there are two logical outcomes of the thesis upon which little agreement could be expected. We have seen that systematic zoologists place the shark, the giant salamander, the tuatara, and the ostrich on the bottom rung of the ladder of classification in their respective phyla. Would the systematist agree to giving man a like situation in the mammalian phylum? It is to be doubted if we, with our fine conceit of ourselves, would ever consent to assigning to man the bottom place in the mammalian phylum and putting horses and hares and lions near the top. Yet, logically, I can see no sort of escape from this. His place is rightly at the bottom and that is where we should put him.

* * *

But with man we fail to produce one piece of evidence that has been abundantly forthcoming in relation to other permanently immature animals. With all of them there was the assurance of great antiquity and we know that from their ancient stock they have descended comparatively unchanged through an immensity of time—the time being coincident with the total life of their own phylum and therefore longer for the shark than for the ostrich. Rightly, then, man should have come into existence in some not completely unrecognisable guise, at the dawn period of mammalian life. Probably no right-minded person would admit that as a possibility; but it is never very safe to exclude any possibility when so many secrets still remain hidden beneath the surface of the Earth.

THE LANCET 100 YEARS AGO

December 15th, 1838, p. 435.

A quotation from Girard's "Traité des Loupes" in an article on goitre.

It is a question in France whether it is not an imperfection to be without this disease, and in Tyrol they allege it passes for an ornament. In places where it is common to everybody, the men and women dispute about beauty according to the regularity and advantageous disposition of the swellings which they carry. The Tyrolese, indeed, treat with the opprobrious appellation of *crane-neck* those of their neighbours, and even strangers, who have not this kind of swelling. An Englishman travelling in this country, attracted the notice of everybody by his figure, but he seemed to want one great requisite of beauty,—"What a handsome man!" said they, "if he had but a fulness of the neck!"

CORRESPONDENCE

PROTECTION OF SCIENCE AND LEARNING

To the Editor of THE LANCET

SIR,—I should be grateful if you would allow me to draw to the attention of your readers the special contribution which the Society for the Protection of Science and Learning is making, and has been making over the past five years, to the refugee problem, which the whole of the civilised world is to-day facing with such remarkable spontaneity and generosity.

This society (of which His Grace the Archbishop of York is president and Sir Frederic Kenyon chairman) exists to help scholars and scientists displaced from their own universities and professions to be reabsorbed into academic life elsewhere, so that their intellectual gifts and training may not be wasted and so that each individual scientist, scholar, and doctor may still be able to make the contribution to knowledge which in many cases he and he alone is capable of making. So far we have succeeded in placing over 500 permanently and nearly 350 temporarily and amongst those whom we have been privileged to help are men and women whose intellectual gifts and genius form part of the cultural wealth of the world.

The Society for the Protection of Science and Learning is not concerned at any time with the problem of those practising medical men who seek to come to Britain from countries where they are no longer able to receive patients; these are the care of another committee, presided over by Dr. Robert Hutchison. Its activities cover only those doctors whose research work has been interrupted in their own land and whose work is of such importance that our medical advisory subcommittee considers that it should be carried on in this country. Needless to say, of very many applications in this class we are, at present, only able to give grants to a small proportion.

This society is holding a number of meetings early in February in the academic centres throughout the country to enable all those engaged in teaching, learning, and research to give corporate and tangible expression to their sympathy. I hope these meetings will have the most generous possible support, as the latest developments in Germany, the crisis in Czechoslovakia, and the new legislation in Italy have trebled our waiting-lists and made each individual problem more pressing and acute. As vice-president of the society I should be grateful if you would publish this letter so that this part of the work undertaken to help these distinguished refugees and exiles of learning may be widely known.

I am, Sir, yours faithfully,

W. H. BEVERIDGE.

Society for the Protection of Science and Learning, 6, Gordon-square, London, W.C. 1, Dec. 10th.

RADIOLOGY AND OBSTETRICS

To the Editor of THE LANCET

SIR,—I was interested to see a contribution to the discussion on the rôle of radiology in obstetrics by Dr. Reece in your issue of Dec. 3rd. It is one aspect of a wide problem in medicine which has been discussed by others in their own spheres, and it is an example of a clash of principles which are quite fundamental. The term "mechanistic medicine" is not good, but it is loosely used to describe methods of diagnosis based upon, and controlled by, our knowledge of the physical and chemical states of the body. It is a method of practice which relies much more on the reports of the chemists, pathologists, radiologists, and others than on what is generally understood by the ordinary clinical examination of the patient.

Variations in chemical conditions and deviations of X ray shadows from the assumed normal are given undue weight in diagnosis and prognosis. "Scientific" medicine turns more and more from regard of the whole man to detailed and often uncoördinated investigation of isolated physiological reactions. The student of to-day, largely under the influence of the clinical unit, is taught to reach his diagnosis by multiple appeals to the various accessory departments of the hospital. He obviously learns exact facts, but not necessarily how to interpret them. Such investigations are essential for the pursuit of a line of research, but, as a training in medicine, this system teaches the student to rely on methods which will not be available in domestic medicine. How many students to-day are taught to order an X ray examination before they may diagnose a breech presentation!

Superficially, the question with which Dr. Reece ends his letter seems to admit of only one answer. "Is it of value to know the relative size of head and pelvis?" It is certainly interesting to have exact measurement in all cases, but not necessarily of value to know them in borderline cases, whereas in obvious cases of disproportion clinical examination will render X ray measurements unnecessary. No one will deny that here and there—for example, in fat or nervous patients—it is of great assistance to have the exact evidence of the radiologist. But, if always interesting to have this knowledge, why is it not always of *value*? It depends upon one's experience of labour. The same X ray degree of minor disproportion between head and pelvis in two different women may provide no guidance to prognosis, because, mechanical factors being equal, the two women may possess uteri having different degrees of function. The fear caused by subnormal measurements easily leads to Cæsarean section which is often entirely unnecessary.

The student who enters clinical practice—especially general practice—is soon disillusioned. He must begin to acquire his real knowledge of medicine and people after he has joined his partnership, and sometimes he is resentful that his teachers spent so much time in teaching him physical facts that are often useless and even misleading. Dr. Reece is justifiably proud of the great advance in the technical skill of modern radiology, but it must be remembered that the new knowledge, while an adjunct to diagnosis, cannot possibly replace clinical experience gained by a knowledge of women in labour.

I will answer his final question. Insistence on the value of exact knowledge of the size of the head and pelvis may do harm if they make us unmindful of the other wide aspects of labour, both physical and psychological. I am, Sir, yours faithfully,

London, W., Dec. 12th. ALECK W. BOURNE.

HEAT THERAPY

To the Editor of THE LANCET

SIR,—In the abstract of Dr. F. S. Cooksey's post-graduate lecture in your issue of Dec. 3rd the statement is made that "it is generally held that penetration is greatest with wave-lengths corresponding to a body just below dull red heat." This is not the case. The rays from such sources have practically no power of penetration, and their heating effect is due to conduction inwards from the heated surface of the skin. The absorption by a thin film of water, about 0·1 mm. thick, screens off all radiation of

greater length than 2μ, while 1 cm. of water absorbs all infra-red rays longer than 1·2μ.

The absorption of the horny layer of human skin, and of rats' skin, was shown by H. J. Taylor (*Proc. roy. Soc.* A, 1931, **142**, 598) to be not very different from a layer of water of the same thickness. The rays that do penetrate a little deeper are the red and the short infra-red, which are best generated by high temperature sources. If an electric torch is put in the mouth in a dark room, a dim red light can be seen coming through the cheek, which is about 5 mm. thick. The other visible rays are absorbed by the blood in the derma and the tissues of the skin. In a negro no red glow will come through because of absorption by pigment. Erroneous statements as to the penetration of heat rays are frequently made by the manufacturers of infra-red lamps.

I am, Sir, yours faithfully,

St. John Clinic, S.W., Dec. 10th. LEONARD HILL.

THE "IRON LUNG"

To the Editor of THE LANCET

SIR,—I feel I must draw attention to the possible risks attending the use of respirators of the Drinker type if they are constructed of wood. I have just received from Prof. Philip Drinker, of Harvard School of Public Health, a reprint from the *Journal of Pediatrics* (St. Louis, July, 1938) dealing with an emergency respirator in which the cabinet was made of wood, the concluding paragraph of which reads as follows:—

"Such respirators made with the best cabinet-quality wood and by skilled cabinet workers have checked and cracked in an annoyingly short time. Such failure is probably caused by the rapid pressure changes and dampness within the respirator. It is, therefore, risky to use such a machine, put it in storage in the basement and then expect it to be in working condition when the emergency arises. Theoretically, the wooden machines should last a long time. Practically, this has not proved to be the case."

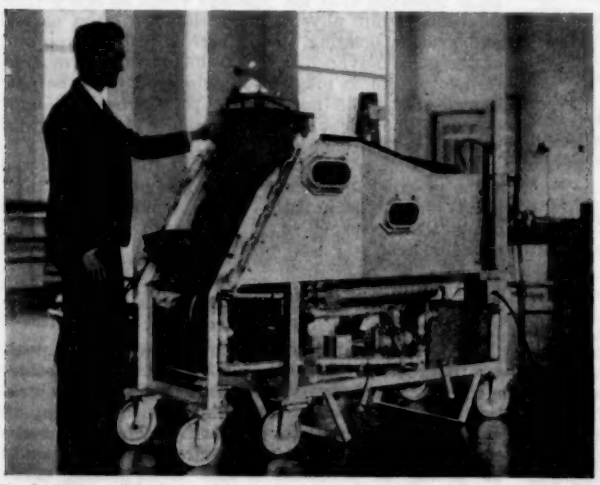
I enclose a photograph of Prof. Drinker with the type of apparatus approved for use in America by a council of the American Medical Association at the time when he brought over the first machine to the London School of Hygiene and Tropical Medicine in 1931. The Both wooden respirator makes use of the previous work of Drinker and Louis Shaw and will no doubt have to be operated according to the methods derived by their experience.

It would be a pity if the generous offer of Lord Nuffield to give the wooden respirators of the Drinker type, as designed by Mr. Both, to hospitals was carried out without first ascertaining whether they will not deteriorate in the English climate.

I am, Sir, yours faithfully,

GUY P. CROWDEN.

London School of Hygiene and Tropical Medicine, (University of London), Keppel-street, W.C., Dec. 9th.



Prof. Philip Drinker with the mechanical respirator of Drinker and Shaw. Photograph taken at the London School of Hygiene and Tropical Medicine in 1931.

CHEMOTHERAPY OF GONORRHŒA

To the Editor of THE LANCET

SIR,—Among the many articles in the English medical journals concerning the use of sulphanilamide in the treatment of gonorrhœa, I have not so far seen any which refer to its possible effect on spermatogenesis. Dr. Jules Janet, writing in the *Siècle Médical* of April 1st, 1938, quotes the following findings by Jaubert and Motz:—

"After the ordinary lavage treatment of gonorrhœa a normal spermatozoon count is the rule, but after sulphanilamide treatment only 39 per cent. of cases had a normal count. Cases with a very low spermatozoon count are found in 0·4 per cent. of patients treated by the ordinary method, but after sulphanilamide treatment 30 per cent. had a low count, verging on a state of azoospermia. This alteration, in 50 per cent. of cases, was still present after three months. In only one case was amelioration seen three months after cessation of treatment."

Dr. Janet finishes thus: "France has too many causes of depopulation. Our rôle is not to create new ones."

In my own patients I have not made any investigation of the spermatozoa, but I have noted two cases of relative impotence following the use of sulphanilamide. It would be interesting to know whether any investigation has been made on the above lines in this country.

I am, Sir, yours faithfully,

Jermyn-street, S.W., Dec. 10th. JAMES MARSHALL.

TREATMENT OF TRIGEMINAL NEURALGIA

To the Editor of THE LANCET

SIR,—Letters in your last two issues prompt me to emphasise a point to which I have never seen or heard reference made in the teaching of Gasserian ganglion injection, although I have demonstrated it to students for many years.

The question of the need to inject any material takes precedence over that of its quality if it is realised that at the moment the protruding and blunt stilette makes sufficient contact with the ganglion, as well as during continued contact, and before an injection of any kind has been made, the previously active corneal reflex is abolished. It is consequently inaccurate to explain the abolition of this reflex in terms of the material which is subsequently injected, although doubtless we assume correctly that continuation of abolition is based thereon. Given just the suitable patient the time factor of anæsthesia from ganglion penetration or mere contact would be worth study. Lest the question should arise as to the presence of spirit on the metal I should add that my instruments are served in the water in which they were sterilised and which is still warm. This matter of the corneal reflex is of some importance, particularly in the occasional case in which the foramen ovale has been entered, by the anterior route, without the operator having

first touched bone. It is not every patient who is aware, or at any rate demonstrates his awareness, that the operator has made contact with ganglion, roots, or branches.

A somewhat similar result of contact between metal and nerve is seen in stylomastoid foraminal entry for facial hemispasm, although compression and perhaps transfixion of the nerve are larger factors than mere contact in this case. If the spasm is in action it ceases instantly the stilette is sufficiently within the Fallopian canal, and palsy is as instantly demonstrated. If the spasm is not in action there may be a facial twitch and then at once palsy; but palsy may occur without the twitch. Facial hemispasm may occasionally be stopped by contact between metal and nerve alone without the development of any palsy. The likely duration of such palsy or relief from spasm I do not know, because the habit is to reinforce with alcohol these effects of contact. I am, Sir, yours faithfully,

Westminster Hospital, Dec. 9th. HILDRED CARLILL.

DIPHTHERIA DIAGNOSED WHILE YOU WAIT

To the Editor of THE LANCET

SIR,—Your leading article of Nov. 19th is of more than ordinary interest to all concerned with the treatment of diphtheria, suggesting as it does a means which will assist the medical practitioner rapidly to decide on the need or otherwise for the injection of antidiphtheritic serum. It is not my intention here to enter into the question of its scientific reliability. In the City Hospital, Fazakerley, clinical observations are in process, and at the same time the corresponding bacteriological side is being checked by Prof. D. Hedley Wright, the city bacteriologist. Beyond that, it would not be judicious at this stage to pass any comment. I desire, however, to mention one sequence of the painting of the throat with potassium tellurite solution: within a few hours the clinician, nurses, and the patient, if old enough, must be prepared for the production, from the throat, of a profoundly fœtid odour suggesting a mixture of garlic and sulphuretted hydrogen—an odour which may persist for some days.—I am, Sir, yours faithfully,

E. A. BURNS,

Dec. 12th. Principal Medical Officer, City Hospital, Liverpool.

CHILDREN IN CATALONIA

To the Editor of THE LANCET

SIR,—It is difficult for people to realise the urgency of the situation arising with regard to the nutrition of children in Spain. A few statistics may help to open their eyes to the magnitude of the problem. For instance, in Catalonia alone there are 1,100,000 children under fifteen years of age, including refugees and the civilian population. Of these, the workers of the International Commission for the assistance of Child Refugees in Spain estimate that 825,000 are in grave need. The remaining 275,000 are the children of country peasants whose minimum ration can be supplemented by small amounts of local produce, such as eggs and vegetables.

All the relief work that is going on in Spain to-day covers only one-tenth of the children in most urgent need. For instance, there is no source of milk available for the city children between two and five years of age (of whom there are about 54,000) except the canteens run under the auspices of the Society of Friends, which cover about 5000 children in the city of Barcelona. The State-controlled milk has perforce to be restricted to babies under two. Milk brought into Spain by voluntary aid organisations is almost wholly distributed through the schools and this covers only the children from five to fifteen years of age.

The minimum rations obtainable in the markets are not sufficient to supply basic needs. The diet obtainable is deficient in protein, fat, vitamins, and some minerals especially calcium and iron. The result is that the children are rapidly using up their reserves of body fat, and are beginning to show evidence of undernourishment amounting in some cases to semi-starvation. Nutritional anæmia, rickets, marasmus, and even starvation œdema are becoming common, especially among young children for whom the available diet of coarse bread, beans, dried fish, and rice is particularly unsuitable. There is a great lack of fat in the diet and to this may be attributed the fact that rickets, which has been practically unknown in Spain where sunshine and olive oil have always been abundant, is now manifest in about 60 per cent. of the children under two years of age. With the onset of winter the mild form of rickets at present met with cannot fail to develop into a more acute form if present conditions are maintained.

There is just time for civilisation to avert a catastrophe that threatens to compare with post-war Vienna in 1918.—I am, Sir, yours faithfully,

AUDREY RUSSELL,
Delegate in Catalonia of the International Commission for the Assistance of Child Refugees in Spain.

*** Money may be sent to the National Joint Committee for Spanish Relief (4, Great Smith-street, London, S.W.1); to the Friends Service Council (Friends House, Euston-road, N.W.1); or to the Spanish Medical Aid Committee (24, New Oxford-street, W.C.1) stating the purpose of the donation. Gifts of warm clothing, and especially of children's boots and shoes, will be gratefully received by the National Joint Committee at 15, Great James-street, W.C.1. The address of the International Commission for the Assistance of Child Refugees in Spain is 52 rue des Paquis, Geneva.—ED. L.

ADAPTING THE LIMB TO THE STUMP

To the Editor of THE LANCET

SIR,—In your issue of Dec. 10th you published a review of my new book "Back to Activity" under the above heading. In the latter part of it you state:

> The makers still complain that amputations are sometimes made too low down in the thigh or leg, and they counsel higher operations in order to make the fitting of an artificial limb easier. Surely this is putting the cart before the horse; a design should be evolved which is adapted to the amputation.

Over 200,000 limbs were amputated as a result of the late war, and during the last twenty years we have been able to study the results obtained with all types of amputations. We do not complain that amputations are made too low down because we cannot design special limbs to suit them. Twenty years ago we were compelled to design 14 different models of limbs to suit all the varied amputations which were done during the war, many of which were above and below the knee amputations where the stumps were too long.

It must be clearly understood that the mechanical difficulties caused by too long a stump are only a small part of the problem; the main difficulty being that with too long a stump it is very often impossible to give the patient a comfortable fit, owing to the fact that with such a stump the circulation is often very poor and causes swelling, and in some cases the scar at the end of the stump breaks down and will not heal. In addition, the limb has to be made a very ugly shape, and this can be an important point for a woman.—I am, Sir, yours faithfully,

Baker-street, W., Dec. 13th. E. R. DESOUTTER.

PARLIAMENTARY INTELLIGENCE

TREATMENT OF CANCER

IN the House of Commons on Dec. 12th Mr. ELLIOT, Minister of Health, in moving the second reading of the Cancer Bill, gave further details of the Government's scheme for bringing facilities for the effective treatment of cancer within the range of every person in the country. He said that inquiries conducted by the Ministry showed that there were over 100,000 persons in the United Kingdom suffering from cancer during 1937. In about 10 per cent. of these the disease was present in organs for which treatment has not hitherto been practicable. A further 50 per cent. were suitable for treatment by surgery if their disease was diagnosed at an early stage. This group included cancers of the stomach and intestine, which accounted for the largest number of deaths. There remained about 40,000 patients who suffered from the disease in easily accessible parts of the body. For these patients treatment by surgery, often combined with radiation, or radiation alone, was effective, especially in the early stages. Even when the disease appeared to be too far advanced for curative treatment, alleviation and occasional unexpected cures could be obtained by the expert use of radiation.

Under present conditions only about a quarter of the patients who could be treated with advantage obtained treatment at centres with expert surgeons, expert radiotherapists, and a sufficiency of radium and deep X ray apparatus. It was true that not all the remaining patients were susceptible to treatment, but more might become so if facilities for early diagnosis were improved.

The long "waiting lists" at most of our voluntary hospitals led to delay in initiating treatment, and also to a lack of bed accommodation for those patients who were beyond hope of cure but whose sufferings could be alleviated. Many cancer patients applied for treatment only at a stage when treatment was no longer possible, because they feared they were suffering from cancer, which they regarded as incurable. This bogy of incurability, which at one time applied also to tuberculosis, was one of the things that the Bill was designed to combat.

This Bill attempted to ensure that everyone, wherever he was domiciled, who was suffering or suspected by his doctor to be suffering from cancer, would be within easy reach of the best available advice, and would be able to obtain admission to an appropriate hospital whether for further examination or for whatever treatment was best suited to his condition. In the London area the problem to be dealt with was less than elsewhere. Out of some 11,000 persons in London suffering from cancer, about 10,000 were at present receiving some form of treatment. Similar conditions applied in some of the larger towns, and a principal object of this Bill was to secure further progress in the parts of the country not so fortunately situated. In order reasonably to meet the more immediate future needs it was estimated that there would be required:—

(*a*) The equivalent of about 12 new treatment centres in addition to the 22 existing centres, fully equipped and staffed, with radiotherapeutic departments, at general hospitals. The existing centres were so placed that there were still large areas of the country in which facilities were not reasonably accessible. There was one hospital on the Tyne, three in the West Riding, three in south Lancashire, four in the Midlands, two in the eastern counties, one on the Cornwall-Devon border, one in south Wales, one in Hampshire, one on the Severn, and one near London, leaving three principal areas of the country inadequately provided for. These were a horizontal band of country south of the Tyne, north and mid-Wales, and an oblique band from the Wash to Devon.

The largest of the national radium centres were associated with the teaching hospitals of provincial medical schools and it was hoped that through these and other channels a larger number of expert radiotherapists would become available to staff the expanded existing centres and the new ones to be formed.

(*b*) About 1000 additional beds at the existing or new centres or in hospitals associated therewith.

(*c*) About 300–350 consultation centres for diagnostic and other purposes.

Additional beds would cost about £390,000, the consultation centres about £350,000, and travelling expenses of patients about £30,000, a total of £770,000. Some of this would be recovered from patients, perhaps £170,000, giving the net total cost of £600,000 for England and Wales, of which the Exchequer would pay £300,000. For Scotland the estimated Exchequer grant was £50,000.

RADIUM AND APPARATUS

In the provision of radium and other radiotherapeutic substances the Government would work through the two existing organisations, the National Radium Trust and the Radium Commission. The trust owned about 20 grammes of radium which it bought out of funds provided partly by public subscription and partly out of a grant of £100,000 from the Exchequer. In addition it had about 18 grammes on loan with an option to purchase at £4500 a gramme. This radium could not be retained indefinitely on loan; and if it was to be kept the trust must be put in a position to pay for it. The radium managed by the commission was at present distributed mainly in the 22 radium centres. Under the Bill the Minister might lend the trust up to a maximum of £500,000 for the purchase of radium and other radioactive substances and apparatus and appliances. The first charge on that fund would be the money required to pay for the 18 grammes which the trust had on loan. The Government had authorised the trust to negotiate for further supplies before the present scheme was made public. The trust had accordingly secured an option to buy a further 10 grammes a year for the next 5 years at £4500 a gramme. They were, however, not pledged to buy more than 2 grammes a year, 10 grammes in all. It was desirable that the financial resources of the trust should be available in respect of other forms of radiotherapeutic treatment, and consideration was therefore being given to the revision of their Royal Charter.

ADVERTISEMENTS

The Bill (Mr. Elliot continued) prohibited the publication of misleading advertisements offering treatment and cures for cancer. Those advertisements were not accepted now by the two great newspaper organisations (the Newspaper Proprietors Association and the Newspaper Society), both of whom had informed him that they supported the inclusion of this clause. Many of the so-called cures for cancer which had been offered to the public were in themselves harmful, but their main danger was that of inducing the sufferer to postpone proper treatment until it is too late. The Bill placed no difficulties in the way of bona fide announcements made to the medical, nursing, and pharmaceutical professions.

Summing-up, Mr. Elliot said that it had been suggested that the Bill provided for too great an expenditure upon radium. But radium, and indeed radiotherapy, was only one of the methods to be used. Furthermore, it was intended that the radium trust should not in future be limited to buying radium exclusively, but should be able to turn its attention to the purchase of any radiotherapeutic apparatus whose efficiency in treatment had been proved. Again, it had been said that no provision was made in the Bill for research into cancer. Great Britain played a prominent part in research, carried on either under the ægis of such organised bodies as the Imperial Cancer Research Fund, directed by the

Royal Colleges of Physicians and Surgeons, the British Empire Cancer Campaign, controlled by a group of distinguished lay and medical persons, or by specialised institutes and organisations such as those of the Royal Cancer, Middlesex, St. Bartholomew's, London, Leeds, Edinburgh, and other hospitals, or by individual workers. He had already received an assurance from the Imperial Cancer Research Fund and the British Empire Cancer Campaign that they would continue to do their utmost and he was sure this would apply equally to the other voluntary organisations he had mentioned. He need not remind the House also of the most valuable research which had been carried on for many years by the Medical Research Council with the help of moneys provided by Parliament. This indispensable work would, of course, be continued and developed quite independently of the present Bill.

POINTS FROM THE DEBATE

Mr. H. MORRISON, who gave the Bill the Labour Party's blessing, hoped that only fully equipped and adequately staffed hospitals would be included in the official scheme. Research should be adequately financed and staffed, for until they knew the cause of cancer they could not effectively deal with the disease. —Mr. COOKE, who remarked that in a previous incarnation he was a surgeon, said that education of the public was desirable, but care should be taken to avoid a cancer neurosis which might be created by fear. This difficulty could be got over by stressing the advances made in treatment, and the fact that a large number of patients could be cured if they were treated and diagnosed in the early stages. The Bill must not be regarded as a Radium Bill. Recently the reputation of deep X ray compared with radium had been increasing. X ray treatment was less expensive, could be applied with greater safety, had deeper penetration, and could be made more easily available all over the country. Especially in superficial cases it was more effective than radium. A most important thing in connexion with cancer was follow-up observation. A case of cancer treated by operation or radiation must be followed up for a period of possibly four or five years.—Mr. WEDDERBURN said that the need of modern facilities for diagnosis and treatment is no less in Scotland than in England. In south-eastern Scotland about 25 per cent. of sufferers do not seek treatment until their condition is hopeless and of the remainder 40 per cent. seek treatment so late that the prospect of cure is seriously prejudiced. Extension of the cancer service in Scotland might be based on the four existing National Radium Centres at Glasgow (2), Edinburgh, and Aberdeen, with the addition of perhaps one other centre. In Scotland provision should be made for about 6000 patients per annum. Assuming that each cancer bed can deal with about 20 cases a year a total of not less than 300 beds would probably suffice. This would involve the provision of perhaps 150–200 new beds.—Dr. SUMMERSKILL suggested that the Minister was not approaching the problem in the proper way. As they went down the economic scale the cancer death-rate rose sharply; the poorer a person was the more likely he or she was to die of cancer. It was those who could not afford a doctor's fee who were not being treated in the first stage, and the Bill made no provision for poor people to get early medical advice. If the Minister would not consider a State medical service he should include the dependants of insured persons under the National Insurance Acts.

Sir E. GRAHAM-LITTLE complained that the Minister had not consulted the experts in this matter. He was mistaken in thinking that this would not be regarded as a Radium Bill. There was consternation in the ranks of those who practised this special subject, for radium was really a receding force rather than an advancing one. The early diagnosis of cancer was extremely difficult. It was even more necessary here than in other departments of medicine that the general practitioner who saw the early cases should be able to recognise the disease. The practitioner had unfortunately become a kind of sorting machine to the consultant or the hospitals. The scheme of having the arrangement of treatment centres made entirely through the local authorities was very suspect. It was in the direction of research that money should be spent, and freely spent.—Colonel NATHAN asked the Minister what voluntary hospitals he had consulted in the framing of this Bill, and why the Westminster, St. Bartholomew's, and the Middlesex Hospitals had been excluded from the consultations; or had he developed the Bill out of his own inner consciousness.—Sir H. MORRIS-JONES said that Dr. Summerskill's suggestion that the poor suffered more from cancer than the rich was not justified by the facts. Investigation was quite as important as treatment. General practitioners should be able to send any case about which they were in doubt to a hospital, not only for treatment but for investigation.—Sir F. FREMANTLE thought that the point about non-consultation by the Minister with the interests concerned had been a bit overdone. The Minister was aware of the general lines of the advice he would have received. In this Bill the Minister was laying down only the general lines of what was to be done. In the latest report of the Medical Research Council there was a table showing the relative frequency of surgical and radiological treatment in the research centres. This showed that 27 per cent. of the cases had been treated by surgical treatment alone, 31 per cent by radiation alone, and 23 per cent. by X rays alone. The figures were fairly equal for the three different methods of treatment. That was why the Bill should not be called a Radium Bill, but a Bill for the treatment of cancer in the best up-to-date way. The general practitioners should be brought into the scheme from the beginning, because it was on them that its success must depend. He hoped that proper provision would be made for the training of medical men in the latest methods of radium and X ray treatment. It would be possible and wise to set aside some particular place and build up a school for this purpose.

Mr. BERNAYS, Parliamentary Secretary to the Ministry of Health, said that it was certainly not the Ministry's intention to press radium in the medical profession. There was no intention to stereotype in any way the method of the treatment of cancer. That was a question for the specialist. As to the complaint that prior consultations had not taken place, if the Minister had held such consultations before he was ready the price of radium would have been sent up. The Minister would be willing to consider holding a conference with expert members of the medical profession if a desire for it was expressed by all the interests concerned.

MINERS' NYSTAGMUS

In the House of Commons on Dec. 9th Miss WARD moved the second reading of the Workmen's Compensation Acts (1925 to 1934) Amendment Bill. She said that when she obtained a place in the ballot for private member's Bills she hoped to put on the Statute Book with the agreement of all parties a measure for new and comprehensive machinery under the workmen's compensation laws for dealing with miners' nystagmus and other industrial diseases to which underground workers were subject. The Bill was based on the unanimous recommendations of the Stewart Committee, on which there were two trade-union leaders. It had therefore been a great surprise to her to find that the miners' representatives in the House were opposed to the Bill, which meant that she could not hope that it would be passed. Their real objection of the miners' representatives to the Bill was, she thought, on the question of a new definition of the disease, involving a test as to oscillation. The Bill attempted to meet objections to the decision of incapacity being in the hands of a medical referee by establishing a medical board selected by the Home Secretary and paid by the State. On

that board there would be two experts, one an ophthalmic surgeon and one a physician, who would not only decide the incapacity or otherwise of the individual workman to work but also assist by reassuring the men, by offering them advice and treatment, and indeed carrying out a friendly test. Whatever the reasons for the turning down of this Bill might be, the nystagmic workers would be the losers.

Mr. G. MACDONALD moved the rejection of the Bill. He said that there were some portions of it that were acceptable, others which were less acceptable, and still others which were thoroughly objectionable. The setting up of medical boards in place of medical referees was a step in the right direction. One medical man should not have the power to determine the whole future of a workman's life. The present procedure, however, was quite sufficient to diagnose the disease. It was unnecessary to say in an Act of Parliament that if the doctor did not find oscillation in the eye continuing for 15 seconds he must say that the man had not got nystagmus. It might be that just at the time when the man presented himself to the certifying surgeon there would not be oscillation. The majority of doctors said that oscillation must be present before there could be nystagmus, but he could produce an important minority of doctors who differed from that view.

Mr. G. LLOYD, Under-Secretary, Home Office, said he shared the disappointment of Miss Ward at the attitude of the miners' representatives. ' Miners' nystagmus, which was first described by that great pioneer in the investigation of industrial diseases, Thackrah, in 1832, first came into real prominence when it was scheduled under the Workmen's Compensation Act in 1906. The total number of cases rose steadily from 460 in 1906 to 6000 in 1914 and 11,000 in 1923; it was satisfactory to note that it had dropped in 1936 to 7724. Everybody would probably agree nowadays that the cause of the disease was inadequate and unsuitable lighting. Lighting conditions had improved considerably, particularly in certain areas, and progress in this respect would be expedited by the regulations which came into operation in 1937. After the careful investigations by medical research committees in recent years there was now practical unanimity of authoritative medical opinion about this disease. The Stewart Committee found that the main defects of the present system were in the unsatisfactory arrangements for medical certification and supervision. One of the facts that came out of the inquiry was that the medical specification was not satisfactory; the matter was somewhat similar in a way to the silicosis problem, in that it was a complicated and difficult disease to diagnose, and the certifying surgeons were not the kind of experts which were regarded as necessary to make authoritative diagnoses. The Committee had to choose between setting up an elaborate and expensive system and adopting a simpler and more commonsense plan.

Mr. G. MACDONALD: Does not the Bill say to the certifying surgeon, "You cannot certify where oscillation is present for less than 15 seconds," and to the medical board that it can?

Mr. LLOYD said that was true; the Committee thought it essential to give some simple and readily understood guidance to the certifying surgeons to deal with this complicated disease. When the test was first mooted the proposal was oscillation for five minutes; later it was reduced to 30 seconds, and in the Bill it was 15 seconds. He was authoritatively advised that it was not possible to have miners' nystagmus without that degree of oscillation occurring at some stage. But the medical board being experts would be free to make a diagnosis without this guidance. The Home Office regretted that the miners' representatives had felt it necessary to oppose the Bill, but he understood Miss Ward did not intend to press the matter. The motion for the rejection of the Bill was agreed to without a division.

THE LORDS DISCUSS HOSPITAL A.R.P.

In the House of Lords on Dec. 1st Lord GREVILLE moved that a detailed scheme should be drawn up and issued to hospitals giving exact instructions as to what steps should be taken in case of air raids. He said that a letter from the Minister of Health, dated July 26th, was the first document the voluntary hospitals received giving any sort of instructions as to what they were to do. This letter reached the hospitals at a time when the honorary staffs generally take their holidays and when committees meet at infrequent intervals. Those who saw the document had practically no opportunity of criticising it. On Sept. 14th the Ministry of Health summoned all the secretaries of voluntary and other hospitals in London to appear at the Ministry that evening. They were then told to evacuate all civil cases and prepare to take in a large number of casualties. The medical officer who addressed these secretaries kept impressing on them that all this was "secret." Why there was this mania for secrecy about information that could have been shouted from the housetops he did not know. So many Green Line buses, they were told, would arrive at a certain hour to take patients away, and they would supply stretchers, gas masks, and a few other things and the hospitals were supposed to do the rest. They heard no word about who was going to do the medical duties in the hospitals or whether the nursing sisters were being taken from the danger area and sent to the base hospitals, where they should rightly be. At Lord Greville's hospital everything was prepared in a very short time, but it cost about £3000—to a voluntary hospital a considerable sum. Had they had more time no doubt much of the expenditure could have been saved.

THE QUESTION OF STAFF

Voluntary hospitals do not have large resident medical staffs. The duties of an honorary medical staff are to attend and give lectures to the students and perform operations for demonstration purposes. Fortunately at Lord Greville's hospital the honorary staff came up to scratch and at once said they would work, though many of them had jobs elsewhere. Some were junior members of the Territorial Force or the Royal Naval Reserve, but they succeeded in making a roster for a twenty-four hour service, with three operating theatres going continuously. Naturally the honorary staff asked, "How long are we expected to do that? We do not mind coming in an emergency for a few days, but we have our own patients to attend to." We could tell them nothing at all. Lord Greville did not think it right to fill the London hospitals with all the leading surgeons in the profession. London would become a front-line trench, and therefore totally unsuitable for collecting large numbers of casualties within its borders. It would have been wiser to have arranged for hundreds of small dressing stations to be attended by medical officers and members of the voluntary corps. An ambulance service could take the injured straight away to clearing stations outside London, and from there they could be distributed to the best hospitals where the valuable medical men and nurses would be kept. There was a line of nine hospitals stretching from Westminster down to Hammersmith, all in close touch with the river, by which thousands of casualties could be evacuated to Oxford, Henley, or Reading, thus obviating the flooding of the roads.—Viscount MERSEY agreed that what hospitals wanted to know was whether they were to retain their medical and nursing staff. He feared that in an emergency some nurses might say there were going off to drive motor-cars or make munitions.

Replying for the Government, Lord GAGE assured Lord Greville that the voluntary hospitals should have full and detailed information about the Government's intentions. He admitted that the crisis caught the Government incompletely prepared. They had to

deal with a state of affairs that was, and still is, largely hypothetical. No one knew what objectives the enemy would choose or how far they would be deterred by our defences. Lord Greville had talked rather as if there were a recognised front line and as if it could be said with some certainty that the base hospitals would be outside the danger area. It was not quite as settled as that. In regard to medical staff, as opposed to the last war, there were two entirely new medical problems. First, we had not only the service needs to think about; we also had the needs of those areas into which the evacuation of London generally was to take place. Secondly, air-raid casualties in London and elsewhere have to be catered for. The plans for the proper utilisation of medical staff have even now not been completely worked out, but this is being done. The organisation of mobile medical units had already begun. Hospital officers were now making visits to each of the voluntary hospitals individually to agree upon the class of case they could undertake in the event of war. In a few weeks all would have been visited and they would know exactly what their task would be.

In the House of Commons on Dec. 8th the Housing (Financial Provisions) (Scotland) Bill was read the third time and passed.

The Mining Industry (Welfare Fund) Bill, which increases the output levy from ½*d.* to 1*d.* for the next five years and earmarks the whole of that increase for the provision of pithead baths, was read a second time.

QUESTION TIME

Health Services in Pitcairn Island

Mr. PARKER asked the Secretary of State for the Colonies what steps had been taken to implement the various proposals made by Mr. J. S. Neill and Dr. Duncan Cook in their recent report on Pitcairn Island, particularly with reference to the appointment of a qualified nurse, and the raising of revenue to provide grants for this and other purposes.—Mr. MALCOLM MACDONALD replied: A small landing tax for all visitors to the Island will be instituted. The revenue will be paid into a deposit account and will be used for financing such of the various proposals submitted by Mr. Neill and Dr. Cook as are found to be practicable. Among these, first importance is attached to the training of a local girl as a public health nurse and the arrangement of regular visits of inspection by officers of the Fiji or Western Pacific High Commission services. A King's Regulation was recently enacted giving power to the High Commissioner to control immigration by permit.

WEDNESDAY, DEC. 7TH

Overcrowding

Mr. DAY asked the Minister of Health whether he could state, according to the last official completed housing survey, the number of houses inspected and found to be overcrowded, giving separate figures of those found to be unfit for human habitation.—Mr. ELLIOT replied: The latest reports of the medical officers of health place the number of overcrowded houses at the end of 1937 at 265,000—a reduction of about 77,000 on the figure of the original survey of 1935–36. No records are available of how many of these houses were also unfit for human habitation.

Medical Examination of Motor Drivers

Sir E. GRAHAM-LITTLE asked the Minister of Transport whether his attention had been drawn to the case of Donald William Spalton, charged and convicted at Burton-on-Trent county police-court on Nov. 22nd for driving without due care and attention, when it appeared in evidence that some months before he had suffered from severe concussion in a motor accident; and whether he would issue regulations requiring a person who had suffered from an injury likely to impede his driving ability to pass a medical examination and a driving test before he was allowed to drive a motor-car again.—Mr. BURGIN replied: Yes, Sir. I am informed that the person named was convicted for driving without due care and attention and also for failing to stop after an accident. I have no power to issue regulations in the sense suggested, and in any case it would be difficult to define precisely the kind of injury to which regulations of this character should apply. Section 5 of the Road Traffic Act, 1930, provides that an applicant for a driving licence shall declare whether or not he is suffering from a disease or disability which would be likely to make his driving a source of danger, and further that if a licensing authority has reason to suppose that the holder of a licence suffers from such a disability they may revoke the licence. In each case the sufferer may, except where certain specified disabilities are involved, claim to undergo a test.

Refugee Doctors from Germany

Mr. LATHAN asked the Home Secretary whether, in view of the recognised need for an improvement in the physique of the nation, he would take steps to increase the proportion of doctors by permission for a greater number of refugee doctors from Germany and Austria to reside and practise in this country.—Mr. GEOFFREY LLOYD replied: My right hon. friend knows of no grounds for the suggestion that efforts to improve the physique of the nation are hampered by a shortage of doctors or that the admission of a further number of refugee doctors from Germany and Austria to practise in this country without regard to the special part they might be expected to play in the work of the national fitness movement would achieve the object the hon. Member has in mind.

Cancer and the Bill

Sir ERNEST GRAHAM-LITTLE asked the Minister of Health whether, before coming to the final decision as to the best method to combat cancer, he would call a conference, and be guided by its decision, of the heads of cancer departments in the principal institutions in Great Britain engaged in the special study and treatment of this disease in order to be able to arrive at a balanced judgment as to the relative efficiency of several methods of treatment and thus be able to base his proposals on expert opinion as to the most effective and economic methods capable of application to the maximum number of sufferers.—Mr. ELLIOT replied: The Bill at present before the House makes provision for arrangements designed to secure that the facilities for the treatment of persons suffering from cancer are adequate. In considering such arrangements I shall certainly be guided by the opinion of those engaged in the special study and treatment of this disease. I think it is premature to say whether any such conference as that suggested by the hon. Member would be desirable or whether less formal methods of consultation would be more satisfactory.

MONDAY, DEC. 12TH

Emergency Register of Nurses

Mr. ROSTRON DUCKWORTH asked the Minister of Health whether the emergency register of nurses, which it was proposed to set up, would include persons who had a knowledge of nursing but who did not normally practise it and whose services would be useful at times when the professional nurses were required for institutional work.—Mr. ELLIOT replied: Yes, Sir. One of the main objects of the register is to secure the services in a national emergency of women with nursing experience who are no longer practising and who would be a valuable reinforcement to nurses already attached to hospitals and other institutions.

Cheap Milk Schemes

Mr. THOMAS WILLIAMS asked the Minister of Agriculture whether he could give an undertaking that the postponement of the Milk Industry Bill would not prejudice the continuation of financial assistance in respect of the

supply of cheap milk to children and expectant mothers.—Mr. MORRISON replied: Increased provision for Exchequer grants towards cheap milk schemes was made in the Milk (Extension and Amendment) Act, 1936, and under this legislation grants can be continued up to the end of next September. As regards the long-term policy, I regret that I am unable at the moment to add to the statement made by the Prime Minister on Dec. 1st.

TUESDAY, DEC. 13TH

Sale of Contraceptives from Slot Machines

Mr. ACLAND asked the Home Secretary if he could give any indication of the number of slot machines for the sale of contraceptives in existence and of the parts of the country in which those machines were to be found; and whether there were any parts of the country and, if so, which parts, in which his department regarded the numbers of these machines in existence as a source of danger to health or to morals.—Mr. GEOFFREY LLOYD, Under-Secretary, Home Office, replied: My right hon. friend's attention has only been drawn to the existence of such machines in three large centres and he has no information that in any part of the country there is an appreciable number.

OBITUARY

JOHN SINCLAIR, C.B.E., M.D. Durh., M.R.C.P.

Dr. Sinclair died at Cheltenham on Dec. 9th at the age of 78. He was associated with the medical department of the Post Office for almost the whole of his professional life and he preceded Sir Henry Bashford as chief medical officer.

John Sinclair was the son of Edward Sinclair and was born at Mancetter in Warwickshire in 1860. From Oswestry School he went to Durham University and then to the London Hospital. He qualified in 1882 and, after being clinical assistant and house physician at the London Hospital and R.M.O. at Queen Adelaide's Dispensary, joined the medical department of the Post Office in 1884. In 1890 he became second medical officer and in 1913 chief medical officer. In 1912 he and Dr. Theodore Thompson made an exhaustive investigation, on behalf of a departmental committee, into the causes of telegraphists' cramp, a not uncommon condition when the morse key was more generally used, and they were able to make valuable recommendations for its prevention. During his long career with the Post Office he witnessed great and rapid changes and was himself responsible for many of the administrative steps which led to the development of what is now the largest industrial medical service in this country if not in the world. His own medical experience bridged the stage of the general recognition and coming into practice of the Listerian principles; and he was personally a very sound clinician. He was one of the first to recognise the probable insignificance of adolescent albuminuria and to advise the acceptance of otherwise healthy seeming candidates in whom this condition had been found. He had, writes H. H. B., an extraordinarily retentive memory and seldom forgot the names and medical histories of the many thousands of Post Office employees who came under his care. And although, with his rubicund face, military moustache, and short burly figure, he was a bit of an autocrat, he had an essentially kindly heart and was trusted alike both by the Post Office administrators of his day and all the many and varied groups of workers with whom, in his professional capacity, he was brought into contact.

Dr. Sinclair was an honorary life member and examiner to the St. John Ambulance Association and an Esquire of the Order of St. John of Jerusalem. He was chiefly instrumental in founding the Post Office ambulance centre of the Association, now one of the largest in the country. In 1920 he retired from his post as chief medical officer and received the C.B.E. In 1908 Dr. Sinclair married Hester, the second daughter of the late Mr. Robert Deacon of Penarth. His wife died three years ago and he had no children.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 3RD, 1938

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1909; diphtheria, 1545; enteric fever, 29 (36 "expected"); pneumonia (primary or influenzal), 681; puerperal pyrexia, 141; cerebro-spinal fever, 16; acute poliomyelitis, 37; encephalitis lethargica, 6; dysentery, 64; ophthalmia neonatorum, 72. No case of cholera, plague, or typhus fever was notified during the week.

The combined notifications of acute poliomyelitis and acute polio-encephalitis total as follows for the current week and the previous 19 weeks (working backwards): 37, 42, 47, 53, 73, 74, 88, 85, 68, 56, 63, 83, 76, 82, 76, 83, 87, 63, 41, 29.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 9th was 3272, which included: Scarlet fever, 758; diphtheria, 1152 (carriers, 21); measles, 8; whooping-cough, 438; puerperal fever, 19 mothers (plus 11 babies); encephalitis lethargica, 284; poliomyelitis, 13. At St. Margaret's Hospital there were 26 babies (plus 14 mothers) with ophthalmia neonatorum.

Deaths.—In 126 great towns, including London, there was no death from small-pox or enteric fever, 1 (0) from measles, 2 (0) from scarlet fever, 16 (4) from whooping-cough, 28 (4) from diphtheria, 41 (13) from diarrhœa and enteritis under two years, and 24 (1) from influenza. The figures in parentheses are those for London itself.

Liverpool and Stockton each had two deaths from whooping-cough. Fatal cases of diphtheria were scattered over 21 great towns, Liverpool 3, Bradford and Stockport each 2. Birmingham reported 8 deaths from diarrhœa.

The number of stillbirths notified during the week was 245 (corresponding to a rate of 39 per 1000 total births), including 32 in London.

NEW BUREAU OF DAIRY SCIENCE.—The British Commonwealth Scientific Conference which met in London in 1936 recommended that an Imperial Bureau of Dairy Science should be established with headquarters at the National Institute for Research in Dairying, Shinfield. This recommendation has now been carried out and Prof. H. D. Kay, D.Sc., director of the institute, has also been appointed director of the new bureau, while Mr. W. G. Sutton, from Massey Agricultural College, New Zealand, has been appointed deputy director. The bureau is financed coöperatively by the governments of the British Empire in the same way as the other imperial agricultural bureaux. The bureau will index research work in dairy science, and collect, abstract, and collate information which it will distribute both by publication and by private communication to research workers, officials, and advisory officers throughout the Empire. Its ambit will include the microbiology, chemistry, and physics of milk and its products; animal diseases in so far as they affect milk and its products; the technology of processing milk and manufacturing dairy products; the physiology of milk secretion as affecting quality and quantity of milk and dairy products; and standards for the composition and quality of milk and its products. The bureau will also promote conferences of workers and visits to research centres, and encourage the circulation of information, ideas, material, and personnel.

MEDICAL NEWS

University of Oxford

On Dec. 10th the following degrees were conferred:—

D.M.—H. R. Bathurst-Norman and D. G. Ferriman.
B.M., B.Ch.—J. C. G. Abraham, C. D. Cormac, E. H. Hiley, E. L. James, R. G. W. Ollerenshaw, E. M. Poulton, L. G. C. E. Pugh, and J. Scholefield.

University of Cambridge

On Dec. 9th the following degrees were conferred:

M.D.—W. A. Elliott, A. K. Monro, and L. C. Cook.
M.B., B.Chir.—*A. W. Bone, *G. V. Steward, K. E. Bond, Anthony Winder, A. H. Masina, and R. S. Saxton.
M.B.—*F. H. Masina and A. H. Gurney.
* By proxy.

University of London

Dr. H. E. A. Boldero has been appointed as one of the representatives of the general medical schools on the senate for the period 1938–42 in succession to the late Prof. Dudgeon. Colonel P. H. Mitchiner, F.R.C.S., has been elected chairman of the military education committee. The following examiners have been appointed:—

D.P.H.—Prof. M. E. Delafield, Prof. W. W. C. Topley, F.R.S., Prof. H. D. Wright, Prof. H. B. Maitland (Part I); Prof. M. Greenwood, F.R.S., Prof. W. W. Jameson, Dr. W. A. Daley, and Dr. William Gunn (Part II); and Dr. Gunn (hospital administration and the clinical aspects of infectious diseases).
Diploma in Clinical Pathology.—Prof. E. C. Dodds, Prof. James McIntosh, and Prof. J. W. S. Blacklock.

Royal College of Surgeons of England

A meeting of the council was held on Dec. 9th with Mr. Hugh Lett, the president, in the chair. Mr. Seymour Barling was appointed to represent the college on the court of governors of Birmingham University, and Mr. L. E. C. Norbury on the Central Council for District Nursing.

Diplomas of fellowship were granted to the following candidates:—

G. M. Housden, M.B. Lond.; Mendel Gordon, L.R.C.P. Lond.; H. J. Croot, M.B. Lond.; D. M. Cooper, M.B. Lond.; I. N. Blusger, L.R.C.P. Lond.; R. S. Handley, M.B. Camb.; I. H. Griffiths, M.B. Lond.; Margaret M. C. Louden, M.B. Lond.; B. W. Fickling, L.R.C.P. Lond.; E. P. H. Drake, M.B. Camb.; S. R. Chandra, M.B. Calcutta; H. R. S. Harley, M.B. Lond.; Simon Marinker, M.B. Lond.; V. D. Logue, M.R.C.P. Lond.; H. S. Kander, L.R.C.P. Lond.; E. H. Hambly, M.B. Lond.; J. K. Bremer, M.B. Capetown; E. S. James, M.D. Manitoba; E. A. E. Hedberg, M.B. Sydney; Leon Chanock, M.B. Aberd.; N. R. Desai, M.B. Bombay; A. W. Douglas, M.B. N.Z.; E. E. Dunlop, M.B. Melb.; H. H. Eddey, M.B. Melb.; Nathan Garber, M.B. Witw'srand; W. B. Highet, M.B. N.Z.; T. G. Lowden, B.M. Oxon.; R. I. Mahadevan, M.B. Madras; Mary H. Mayeur, M.D. Lond.; Khalil Mazhar, M.B. Cairo; F. H. Mills, M.B. Sydney; A. L. Newson, M.B. Melb.; H. R. C. Norman, M.D. Toronto; J. G. O'Donoghue, M.B. Melb.; Richard Orgias, M.B. N.Z.; Harold Park, M.B. Edin.; E. P. Row, M.B. Sydney; Hassan Sobhi, M.B. Cairo; and G. M. Thomson, M.B. Sydney.

Licences in dental surgery were granted to the following candidates:—

R. H. Aynsley, O. B. Balean, A. C. S. Barnard, E. K. Breakspear, W. F. A. Butcher, H. G. Bynoe, A. J. Clement, J. C. Coe, F. R. Coffin, E. P. Cutler, G. E. G. Devonshire, G. D. Drury, K. J. Dudding, F. J. Edgell, F. J. H. Edmonds, C. L. Elliott, Gertrud M. Gunz, R. E. Hall, J. D. Hooper, Gladys M. How, E. P. Inge, K. A. Irish, A. D. James, Lewis James, H. V. Jessop, E. W. King-Turner, K. P. Liddelow, D. J. Lyon, I. H. McPherson, P. S. Marshall, E. A. Meadows, W. O. Merker, Alan Middleton, M. L. H. Pearsall, A. S. Peters, R. D. Pett, A. M. Platt, G. B. Player, J. G. Pollock, L. J. Price, D. H. Ridler, A. J. Rogers, F. W. Rushby, Nourhan Sarafian, D. J. R. Shannan, Norman Sharp, J. A. R. Smit, R. S. Stevens, W. J. W. Stokes, C. S. Syms, Eyappen Thomas, Y. J. F. Viader, R. S. Vine, D. N. Watson, J. B. Wilkes, R. C. S. Willis, S. H. Woonton, G. B. Zachary, and Militza W. Zernov.

Diplomas in anæsthetics were granted, jointly with the Royal College of Physicians, to the following candidates:—

J. N. Abelsohn, P. T. Ashby, C. J. Bashall, A. K. Boyle, J. T. H. Butt, W. A. Cobb, Tom Dinsdale, Margaret B. Dow, P. G. L. Essex-Lopresti, N. R. James, D. C. R. R. Jenkins, Alexander Leitch, A. D. Morgan, O. N. Roussel, Ronald Shaw, A. J. Smith, and Una M. Westell.

It was decided that the following words should be added in parentheses between paragraphs 15 (b) and 15 (c) of the regulations for the fellowship:—

"Provided that the candidate has dissected the entire cadaver, the study of dissected parts either in the dissecting room or in the museum may be included in the sixty weeks."

University of Dublin

On Dec. 7th at the School of Physic, Trinity College, the following degrees were conferred:—

M.Ch.—R. L. Forsyth and R. G. Taylor.
M.B., B.Ch., B.A.O.—M. E. C. Balmer, Miriam A. Becket, J. W. Boland, R. S. M. Cooke, H. R. T. Devlin, D. B. George, Emily E. E. Hill, J. R. Mahon, J. L. Mans, D. E. Meares, F. G. Millar, J. E. Milne, J. R. Murdock, F. W. Parke, W. A. J. Pike, Elizabeth M. Rees, Elizabeth L. J. Ryan, Kathleen E. A. Smith, D. K. Stewart, J. G. Waugh, and S. L. Wray.
Licence in Medicine, in Surgery, and in Obstetric Science.—M. D. M. Bergin.

At recent examinations the following candidates were successful:—

M.D.

Reginald Bowesman.

M.CH.

R. L. Forsyth and R. G. Taylor.

FINAL MEDICAL EXAMINATION, PART II

Medicine.—J. G. Waugh, William Sandford, J. R. Murdock, and L. S. Levinson (with second-class honours); Sylvia M. FitzGerald, Myer Herman, Elizabeth L. J. Ryan, Miriam A. Becket, Rosaleen de C. McCormick, W. A. J. Pike, F. G. Millar, W. B. Welply, William Jones, E. R. F. Mellon, J. W. Boland, F. R. T. Hollins, J. L. Mans, Mary A. Conyngham, D. A. Huggard, Kathleen E. A. Smith, and E. R. Coetzee.
Surgery.—Emily E. E. E. Hill, S. L. Wray, and J. R. Mahon (with second-class honours); Miriam A. Becket, F. P. O'Sullivan, J. W. Boland, Elizabeth M. Rees, Kathleen E. A. Smith, M. E. C. Balmer, R. S. M. Cooke, H. R. T. Devlin, D. B. George, D. K. Stewart, F. G. Millar, J. L. Mans, J. E. Milne, D. E. Meares, F. W. Parke, and M. D. M. Bergin.
Midwifery.—M. O'C. Drury and R. S. W. Baker (with first-class honours); C. J. Du Preez, E. G. Hobart, and G. S. Sheill (with second-class honours); D. L. Harbinson, S. F. H. Haughton, E. N. O. Sodeinde, G. A. Anderson, C. H. Rutherford, M. E. Tapissier, J. P. Gore-Grimes, E. F. Keating, W. M. Winn, Sheila Kenny, Patricia D. Concannon, D. St. B. F. Nunan, Kathleen E. A. Smith, Ronald Brass, Boris Serebro, Tom Shier, F. P. O'Sullivan, R. J. Balfe, D. G. Harrison, and J. R. A. Martin.

British Association of Radiologists

At the recent examination for the fellowship of the association, the following were successful:—

J. E. Bannen, M.B., D.M.R.E., T. P. Eustace, M.D., D.M.R.E., S. Nowell, M.B., D.M.R., and R. G. Reid, M.B., D.M.R.E. (in radiodiagnosis); and P. R. Goodfellow, M.B., D.M.R.E. (in radiotherapeutics).

British Association

The annual meeting of the association will be held in Dundee next year from August 30th to Sept. 6th, under the presidency of Sir Albert Seward, F.R.S. The presidents of sections include: Prof. James Ritchie, D.Sc. (zoology), Prof. W. Le Gros Clark, F.R.S. (anthropology), Prof. David Burns, D.Sc. (physiology), and Mr. R. J. Bartlett (psychology).

National University of Ireland

On Dec. 8th the honorary degree of LL.D. was conferred on Sir Walter Langdon-Brown by Mr. E. de Valera, the chancellor of the university. In introducing the honorary graduate Prof. Henry Moore said:—

Sir Walter Langdon-Brown needs no formal introduction to this university, in which he has been extern examiner in medicine for almost four years. While his name is familiar to every member of the medical profession through his medical writings and lectures, his repute is high in literary and scientific circles through his philosophical and scientific works. In addition to holding a leading position as a consulting physician in London, he is emeritus professor of physic in Cambridge University and a fellow of Corpus Christi College, Cambridge. He belongs to many medical and scientific societies, and he holds several honorary degrees. He has held the Croonian lectureship of the Royal College of Physicians of London, and he was the Harveian Orator of the same college. He is the author of several standard text-books and papers relating to medicine, psychology, and philosophy. His latest text-book, "Thus We Are Men," is a masterpiece wherein, with a purity of English style rarely seen to-day, he discusses life in relation to philosophy and psychology, and in which he shows a deep knowledge of human nature. During the time that he has been attached to this university as extern examiner in medicine his colleagues have grown to deeply appreciate his scholarly attainments.

On the afternoon of the same day Sir Walter Langdon-Brown delivered a public lecture on Medicine—Yesterday, To-day, and To-morrow in University College, at which Dr. D. J. Coffey was in the chair. Mr. de Valera was present and a large number of the medical profession of Dublin and others also attended.

The Royal Hospital, Wolverhampton, has been approved for three years as from October, 1937, for the diploma in clinical pathology of the University of London.

Research in Otology

Applications for grants for research in otology from the Norman Gamble fund of the Royal Society of Medicine should be sent to the secretary of the society, 1, Wimpole-street, London, W.1, before Feb. 28th. Further information will be found in our advertisement columns.

British Postgraduate Medical School

Mr. R. Watson Jones will give the first of six weekly lectures on fracture dislocations and other injuries of the joints on Jan. 6th at 2.30 P.M., in the department of surgery. In the department of pathology at 4.30 P.M. on Jan. 11th Prof. J. Shaw Dunn will speak on nephritis and renal changes in hypertension (first of four weekly lectures). On Jan. 10th, 16th, 17th, 24th, and 31st, at 4.30 P.M., in the department of medicine, Dr. Izod Bennett will lecture on nephritis, while the sixth lecture in this series will be given by Prof. J. H. Dible on Jan. 23rd. Application for tickets should be made to the dean of the school, Ducane-road, London, W.

Hearing Aid Manufacturers Association

Under this name a new association has recently been formed to deal with such problems as "trading conduct, trading policy, performance standards and 'truth in advertising.'" It aims by coöperative effort "to educate and advise the deaf to purchase hearings aids from reliable manufacturers only, working in close contact with the medical profession and carrying the seal of the association." The founder members are: Allen and Hanburys, Amplivox, John Bell and Croyden, Peto Scott Electrical Instruments, Radio-Aid, and Aural Appliances (Sonotone). The association may be addressed at 30A, St. George-street, London, W.1.

Westminster Hospital Dinner

Dr. Adolphe Abrahams presided at the postponed dinner of old Westminster students held at the Trocadero, London, on Dec. 13th. It was, he said, the greatest year in the history of the medical school, and he tendered thanks to all those who had made it possible, welcoming by name the president (Lord Wigram), the chairman (Mr. B. D. F. Docker), and the secretary (Mr. C. M. Power) of the hospital who were all present. He went on to analyse the origins of the present hospital staff of whom only nine (or 22½ per cent.) were bred and born at Westminster; six London schools, three other English schools, two Scottish and two Irish were represented, and Dr. Abrahams had the appropriate word for each—Mr. C. Price Thomas, replying to the chairman's toast of The Hospital and Medical School, spoke with feeling of the advantages over the past students of the present students who had a truly magnificent museum and attended voluntary lectures when they could spare time from squash rackets; but, he said, the same friendly spirit prevailed.—Mr. G. Martin Jones, secretary of the Students Union, confirmed this assurance.—Proposing the toast of The New Hospital, Mr. E. Rock Carling described it as a new phase in the adaptation of structure to function. The hospital which had been first to provide proper aseptic operating and proper equipment for radium beam therapy had now initiated a central emergency bureau and was exploiting the powers of the almoner.—Mr. Docker, replying, said the end of the voluntary hospital system had been foretold. The new Westminster was rising with the blessing of the Ministry of Health, the London County Council, the County of Middlesex, and the City of Westminster; it would not be replaced so long as it was efficient and coöperative. He would like to see coöperation extended still further, a panel of local practitioners attached to the hospital as clinical assistants and with representatives attending medical staff meetings. Next May it was hoped to transfer patients, staff, and attendants from the old building within a single day, without interrupting the work of the hospital. Of the 409 beds on the new site 350 would be available for teaching. The new out-patients' scheme with its decentralised organisation and staff of trained almoners was designed to eliminate waiting and keep doctors in close touch with their patients. Finally, with its paying beds he hoped to establish the hospital on a sound financial basis free from the necessity for public appeal.—Sir Stanley Woodwark proposed The Guests, and Lord Macmillan replied to "words which only friendship could prompt and only friendship endure." London, which was proud of its medical schools, had never been a university city; it had only what Arnold Bennett described as the august negation of the very idea of a university. But that was changing, and he asked Westminster men to be loyal to their school and then to claim their share, their interest, and their right in the new design of London University.—Councillor H. S. E. Vanderpant, deputy mayor, voiced the good wishes of the City of Westminster.—Mr. Arthur Evans proposed The Chairman who, he remarked, as an old athlete still does his round in the park and sets the pace to teachers and students alike.

King's College Hospital Centenary

The first meeting of the provisional committee to carry out the wish of the council of King's College that a hospital should be attached to the medical school was held in the college on May 13th, 1839. The object was to secure the lease of a building in Portugal-street which had been occupied as a workhouse. A thanksgiving service to commemorate the centenary of this meeting is to be held in St. Paul's Cathedral on Friday, May 12th, 1939, at 5.30 P.M. The Duchess of Gloucester, as president of the hospital, has expressed her hope to be present, and the Archbishop of Canterbury has consented to give the address. Further information may be had from the house governor of the hospital, Denmark-hill, London, S.E.5.

Far Eastern Association of Tropical Medicine

The congress for 1938 of the Far Eastern Association of Tropical Medicine was held from Nov. 25th to Dec. 10th at Hanoi in French Indo-China. It was officially opened on Nov. 28th by His Excellency, M. Jules Brévié, the Governor-General. The president of the congress was Dr. A. C. Leroy des Barres, professor of radiology in the University of Hanoi. British vice-presidents of sections included Dr. P. S. Selwyn-Clarke, M.C., of Hong-Kong; Dr. A. L. Hoops, C.B.E., of Malacca; Dr. R. D. Fitzgerald, M.C., of Singapore; Dr. C. L. Park, from the League of Nations; and vice-presidents from India, Burma, and Australia. There were delegations from most countries in the Far East (including China and Japan) and from the United States and Honolulu. Dr. Hoops was asked to visit Yunnan Fu, the capital of the province of Yunnan in South China, to report on the extent to which Chinese non-combatants have been killed by aerial bombing, and he has also been invited to inspect the medical arrangements of the Chinese army.

Ophthalmological Congresses

Before the annual congress of the Ophthalmological Society of the United Kingdom, which will take place on April 20th at 1, Wimpole-street, London, W., the International Association for the Prevention of Blindness is holding a meeting at the same address on Wednesday, April 19th, at 2 P.M. The subject for discussion will be the application of the Credé method for the prevention of ophthalmia neonatorum in various countries, and the speakers will include Dr. A. H. Sinclair (Edinburgh), Prof. F. Terrien (Paris), Prof. V. Szily (Munich), Prof. L. Maggiore (Genoa), Prof. Vasquez Barrière (Montevideo), Dr. R. P. Wilson (Cairo), Dr. J. D. M. Cardell (London), and Dr. C. Berens (New York). The association may be addressed at 66 Boulevard Saint-Michel, Paris VI. The International Organization Against Trachoma will hold a meeting on the same day at 4.30 P.M., when Dr. F. J. Lavery (Dublin), Dr. Harry Gradle (Chicago), and Mr. Arnold Sorsby (London) will speak on the incidence and clinical type of trachoma met with in Europe and North and South America. There will also be a short discussion on the treatment of trachoma with sulphanilamide and its congeners. The address of the organisation is 33, Welbeck-street, London, W.1. Members of the congress of the Ophthalmological Society are invited to attend these meetings.

Metropolitan Ear, Nose, and Throat Hospital

This hospital, a hundred years after its foundation, is making its first public appeal "not to be rescued from debt but to extend its healing work." The hospital asks for £32,700, which added to a bequest of £33,000, already received, will make it possible to provide a new children's ward, an X ray department, a deaf-aid and speech-therapy clinic, an enlarged out-patient department, a pathological department, and bed-sitting rooms for its nurses. Contributions should be sent to the Earl of Crawford and Balcarres, the chairman, at the hospital, Fitzroy-square, London, W.1.

New Maternity Block at Paddington Hospital

On Nov. 25th Mr. Ewart G. Culpin, chairman of the London County Council, opened at this hospital a new maternity block which has cost about £50,000. The new building will accommodate 59 maternity patients and set free the ward formerly used for maternity cases for general cases. This will bring the total accommodation of the hospital up to 658 beds. On the ground floor of the new block there are five wards with accommodation for 26 general patients, and a dental and eye department. On the three upper floors are 12 four-bedded, 2 three-bedded, and 5 single-bedded wards for the maternity patients. In addition there is on each of these three floors an emergency delivery-room which can be used as a single-bedded ward, and a crib ward with babies' toilet-room adjoining. The admission unit on the second floor consists of a waiting-room and examination-room. The delivery section on the third floor comprises three delivery-rooms with sound-proof partitions, babies' toilet-room, and a room for premature babies. A solarium has been provided at the south end of each floor of the block, and on the first floor there is also a balcony.

Appointments

BALFOUR, I. H. C., M.B. Lond., Hon. Medical Registrar, to the Royal Sussex County Hospital, Brighton.
CAPON, N. B., M.D. Liverp., F.R.C.P., Hon. Physician to the Royal Liverpool Children's Hospital.
COOPER, D. M., M.B. Lond., F.R.C.S., Resident Surgical Officer and Registrar at the Miller General Hospital, Greenwich.
DICK, NANCY K., M.B. Lond., Resident Medical Officer at the Isolation Hospital, Acton.
FRANCIS, S. G. M., M.B. Edin., Resident Medical Officer at the Children's Hospital, Birmingham.
GUNN, A. L., M.D. Wales, F.R.C.S.E., M.C.O.G., Consultant Obstetrician for the Urban Districts of Chislehurst and Sidcup, Orpington and Swanscombe.
KINNEAR, J. S., Ch.M. St. And., F.R.C.S.E., Resident Surgical Officer at the Royal Halifax Infirmary.
LAUSTE, L. W., M.D. Lond., F.R.C.S., Hon. Surgical Registrar to the Royal Sussex County Hospital, Brighton.
LYLE, T. K., M.D., M.Chir. Camb., M.R.C.P., F.R.C.S., Assistant Ophthalmic Surgeon to King's College Hospital.
PENTON, J. C., B.M. Oxon., Junior Assistant Medical Officer at the Oxford County and City Mental Hospital, Littlemore.
QUIGLEY, E. K., M.B., N.U.I., Assistant Resident Medical Officer at Southlands Hospital, Shoreham-by-Sea.
RADCLIFFE, ANTHONY, M.B. Dubl., F.R.C.S., Ear, Nose, and Throat Surgeon to the Queen's Hospital for Children, Hackney.
SPICER, E. R., M.B. St. And., Assistant Medical Officer at the Cheshire County Mental Hospital, Chester.
WARIN, J. F., M.D. Leeds, D.P.H., Assistant Medical Officer of Health for Birmingham.
WILLIAMS, R. M. H., L.D.S. R.C.S., School Dental Surgeon for Enfield.

Hospital for Sick Children, Great Ormond-street, W.C.—The following appointments are announced :—
RANKING, J. M., M.B. Camb., M.R.C.P., House Physician ;
LEVICK, R. K., M.B. Camb., House Physician ;
MATTHEW, H. J. S., M.B. Edin., House Surgeon ;
ANDERSON, SHEILA M., M.B. Lond., Resident Anæsthetic Registrar ;
MANSFIELD, O. T., M.R.C.S., Resident Surgical Officer ; and
STEWART, R. P., M.B. Manch., Resident Medical Officer at Tadworth Court.

Royal Cancer Hospital, London.—The following appointments in the radiological department are announced :—
FLOOD, P. A., M.A., M.R.C.S., D.M.R., Director of the Department ;
SMITHERS, D. WALDRON, M.D. Camb., D.M.R., X Ray Therapist ;
WYLIE, J. R., M.B. Durh., D.M.R.E., X Ray Diagnostician ;
DOUGLAS, SHOLTO, M.B. Dubl., D.M.R.E., Assistant X Ray Therapist ; and
HURRELL, D. J., M.B., D.M.R., Assistant X Ray Diagnostician ;

Colonial Service.—The following appointments are announced :—
BALFE, B. G. H., M.B. Edin., Medical Officer, Tanganyika Territory ;
BRIGGS, I. L., M.B. Edin., Medical Officer, Northern Rhodesia ;
DUNLOP, E. F. J., M.B. Edin., Medical Officer, Falkland Islands ;
HALL, A. H., M.D., F.R.C.S., Resident Surgeon, Colony Hospital, Grenada ;
HONEYWILL, L. J., F.R.C.S., Medical Officer, Hong Kong ;
MARSDEN, A. T. H., M.D. Durh., Health Officer, Malaya ;
MILNE, H. C. DE B., M.R.C.S., Medical Officer, Kenya ;
PATTON, W. H. G., M.B. Liverp., Medical Officer, Saint Helena ;
TOMLINSON, S., M.B., Medical Officer, Hong Kong ;
MOIR, K. T., M.D. Edin., D.T.M. & H., Specialist, Medica Department, Nigeria ; and
WALLER, G. R., M.B. Edin., D.P.H., Assistant Director of Medical Services (Health), Sierra Leone.

Vacancies

For further information refer to the advertisement columns

Bath, Royal United Hosp.—H.P., at rate of £150.
Birmingham, Dudley-road Hosp.—Jun. M.O., at rate of £200.
Blackburn County Borough.—Asst. School M.O. and Asst. M.O.H., £600.
Board of Control, Hobart House, Grosvenor-square, S.W.—Commissioner, £850.
Brighton County Borough.—M.O.H.
Brighton Sanatorium and Infectious Disease Hosp.—Jun. Res. M.O., at rate of £250.
Cambridge, Addenbrooke's Hosp.—H.S. and H.P., each at rate of £130.
Central London Ophthalmic Hosp., Judd-street, W.C.—Locum for Sen. H.S.
Charing Cross Hosp.—Hon. Clin. Asst. to X Ray, &c., Depts., £50.
Chester Royal Infirmary.—Additional Fourth Hon. Anæsthetist.
Connaught Hosp., E.—Sen. Res. Surg. O., at rate of £200.
Coventry and Warwickshire Hosp.—Ophth. Reg. and Ophth. Clin. Asst.
Dundee Mental Hosp.—Jun. Asst. M.O., £300.
Elizabeth Garrett Anderson Hosp., Euston-road, N.W.—H.P., First, Second, and Third H.S.'s, and Obstet. Asst., each at rate of £50.
Epsom County Hosp.—Res. Asst. M.O., at rate of £250.
Farnham County Hosp., Hale-road.—Asst. M.O., £350.
Guy's Hosp. Dental School, S.E.—Dental Research Fellow, £400.
Hampshire County Council.—Asst. County M.O., £600.
Harrogate Royal Bath Hosp.—Res. M.O., £200.
Hastings, Royal East Sussex Hosp.—Jun. H.S., at rate of £150.
Hosp. for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. Physicians.
Hosp. for Sick Children, Great Ormond-street, W.C.—Out-patient Aural Reg. and Out-patient Med. Reg., £175 and £150 respectively.
Hosp. of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P., at rate of £100.
Hove Borough.—Asst. M.O.H., £500.
Huddersfield Royal Infirmary.—H.S., at rate of £150.
Infants Hosp., Vincent-square, Westminster.—Res. M.O., £300.
Ipswich, East Suffolk and Ipswich Hosp.—H.S., £144.
Kidderminster and District General Hosp.—Sen. and Jun. H.S.'s, £150 and £100 respectively.
Leeds, St. Mary's Infirmary, Armley.—Res. M.O., £250.
Leicester Royal Infirmary.—Sen. M.O. in charge of Women's V.D. Clinics, £350.
Leyton Borough.—Deputy M.O.H. and Deputy School M.O., £660.
Lincoln, The Lawn.—Medical Officer, £300.
Liverpool, Alder Hey Children's Hosp., West Derby.—Sen. Res. Asst. M.O., £350.
London Chest Hosp., Victoria Park, E.—Surg. Reg., £100. Also Reg. to Ear, Nose, and Throat Dept., £50.
London County Council.—Asst. M.O.'s (Class I), each £350. Also Temporary Visiting M.O., at rate of £150.
London Hosp., E.—First Asst. to Ophth. Dept.
Maidstone, West Kent General Hosp.—H.S., £175.
Manchester, Ancoats Hosp.—Asst. Pathologist, £400.
Manchester, Christie Hosp. and Holt Radium Institute, Withington. Res. Surg. O., at rate of £150.
Manchester, County Mental Hosp., Prestwich.—Sen. Asst. M.O. £700. Also Locum Tenens, 7 guineas a week.
Manchester Hosp. for Consumption and Diseases of the Throat and Chest.—Asst. M.O. for Crossley Sanatorium, £200.
Metropolitan Hosp., E.—Second Aural Surgeon.
Middlesbrough, St. Luke's Mental Hosp.—Asst. M.O. and Deputy Med. Supt., £500.
Newcastle-upon-Tyne, King's College.—Asst. Bacteriologist in Public Health Laboratory, at rate of £400.
Norwich, Norfolk and Norwich Hosp.—Cas. O., £120.
Oldham Municipal Hosp.—Res. Asst. M.O., at rate of £200.
Oxford, Radcliffe Infirmary.—Asst. Physician to Dept. of Physical Medicine, £400.
Plymouth, City General Hosp.—Jun. Asst. M.O., at rate of £250.
Poplar Hosp., East India Dock-road, E.—Second Res. Officer, at rate of £175.
Preston Royal Infirmary.—H.S., at rate of £150.
Reading, Royal Berkshire Hosp.—H.S. to Spec. Depts. and Cas. O., each at rate of £150.
Rhondda Urban District Council.—Asst. M.O., £500.
Romford, Oldchurch County Hosp.—Jun. Res. M.O., £250.
Rotherham General Hosp.—Hon. Ophth. Surgeon.
Royal Cancer Hosp., Fulham-road, S.W.—Asst. Surgeon.
Royal Naval Medical Service.—M.O.'s.
Royal Society of Medicine, 1, Wimpole-street, W.—Norman Gamble Research Fund.
Samaritan Free Hosp. for Women, Marylebone-road, N.W.—H.S., at rate of £100.
Sheffield Royal Infirmary.—Res. Surg. O., £200. Also Ophth. H.S., £120.

South London Hosp. for Women, Clapham Common, S.W.—Surg. Reg., £200.
Southampton Free Eye Hosp.—Orthoptic Teacher, £180.
Swansea General and Eye Hosp.—H.S., at rate of £150.
University College Hosp., Gower-street, W.C.—Belton Pollard Fellowship, £650. Also Asst. to Dept. of Radiotherapy, £500.
Wadsley Mental Hosp.—Asst. M.O., £350.
Watford and District Peace Memorial Hosp.—H.P., at rate of £150.
Weir Hosp., Balham, S.W.—Jun. Res. M.O., £150.
Wolverhampton Royal Hosp.—Res. Anæsthetist, at rate of £200.
Worcester Royal Infirmary.—H.P., £150.
The Chief Inspector of Factories announces vacancies for Examining Factory Surgeons at Winchester (Hampshire), Usk (Monmouth), and New Abbey (Kirkcudbright).

Births, Marriages, and Deaths

BIRTHS

FORD THOMSON.—On Dec. 9th, at the Prince of Wales Hospital, Patna, India, the wife of Capt. J. Ford Thomson, I.M.S.—a son.
HOSKIN.—On Dec. 14th, at 112, Harley-street, to Maisie, wife of Dr. Jenner Hoskin—a son.
MAITLAND.—On Dec. 3rd, at Norwich, the wife of the late Dr. F. G. Maitland—a daughter.
POST.—On Dec. 7th, at Welbeck-street, W., the wife of Dr. H. W. A. Post—a son.
RIX.—On Dec. 10th, at Welbeck-street, W., the wife of Dr. R. Ernest Rix—a daughter.
SEDGWICK.—On Dec. 6th, at Nuffield House, Guy's Hospital, the wife of Dr. Philip G. Sedgwick—a son.
SMYTH.—On Dec. 8th, to Dr. Olga F. Smyth (née Tregelles), of Mill Hill—a son.

MARRIAGES

FYFE—FAIRCLOUGH.—On Dec. 10th, at St. Mary's Church, Wimbledon, George Matthew Fyfe, M.B. Aberd., to Helen Fairclough.
MACBETH—MCEACHERN.—On Dec. 10th, at St. Andrew's Church, Helensburgh, Roderic Ivan Macbeth, M.R.C.S., to Janet Lilburn McEachern.
MARR—DRUMMOND-HAY.—On Dec. 9th, at Marylebone Register Office, Neil G. Marr, M.B. Aberd., to Gladys Lorna Drummond-Hay.
MAY—ISON.—On Dec. 13th, in London, Martin May, of Harley House, W., to Muriel Ison, M.D.

DEATHS

BRYETT.—On Dec. 6th, at Winchester, William Robert Bryett, M.D. Lond., Barrister-at-Law, aged 72.
ELDRED.—On Dec. 10th, Arthur George Eldred, O.B.E., D.S.O., M.R.C.S., of Mylor, Cornwall, and Dedza, Nyasaland.
FINLEY.—On Dec. 12th, at Malvern, Harry Finley, M.D. Lond., M.R.C.S.
FOSBERY.—On Dec. 13th, William Hubert Sale Fosbery, M.D. Camb., of Tilehurst, Berks, aged 71.
FOX.—On Dec. 11th, at Bantham, Kingsbridge, Edward Lawrence Fox, M.A., M.D. Camb., of Plymouth.
LEITCH.—On Dec. 7th, at Cambridge, Arthur Gibson Leitch, L.R.C.P.E.
PHILLIPS.—On Dec. 7th, at Haywards Heath, Percy Cranston Phillips, M.R.C.S., aged 70.
POWELL.—On Dec. 8th, at Tooting, Daniel Evans Powell, M.B. Glasg., aged 67.
SINCLAIR.—On 9th December, 1938, at 5, Royal-crescent, Cheltenham, John Sinclair, C.B.E., M.D. Lond., M.R.C.P., etc., Esquire of the Venerable Order of St. John of Jerusalem in England, aged 78 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary

Dec. 19th to Dec. 24th

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY.—5.30 P.M., general meeting of fellows.
THURSDAY.
Dermatology.—5 P.M. (cases at 4 P.M.), Dr. R. Klaber: (1) Melanodermia. Dr. F. Parkes Weber: (2) Angioma Serpiginosum.
HUNTERIAN SOCIETY.
MONDAY.—8.30 P.M. (Simpson's Restaurant, Bird-in-Hand-court, 76, Cheapside), Dr. George Riddoch, Mr. C. Hamblen-Thomas, and Dr. George Bray: Sneezing.
EUGENICS SOCIETY.
TUESDAY.—5.15 P.M. (rooms of the Royal Society, Burlington House, Piccadilly, W.), Mr. R. S. Walshaw: External Migration.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.
TUESDAY.—4.30 P.M., Prof. E. Mapother: Medical Psychology.
WEDNESDAY.—NOON, clinical and pathological conference (medical). 2 P.M., Mr. E. J. King, Ph.D.: Kidney Function. 3 P.M., clinical and pathological conference (surgical). 4.30 P.M., Sir Henry Dale, F.R.S.: Chemical Transmission of Nerve Impulses.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.
HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY.—2 P.M., Dr. Wilfred Pearson: Jaundice. 3 P.M., Dr. D. B. Bradshaw: Desensitisation Therapy and Vaccines in Respiratory Disorders.
Out-patient clinics daily at 10 A.M. and ward visits at 2 P.M.
ST. GEORGE'S HOSPITAL, S.W.
THURSDAY.—5 P.M., Dr. Anthony Feiling: neurological demonstration.
HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.
WEDNESDAY.—4 P.M., Dr. H. C. Semon: Common Skin Diseases.
GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY.—4.15 P.M. (Ophthalmic Institute, 126, Regent-street), Dr. A. Garrow: Detachment of the Retina.

SURGICAL PARCHMENT

LITTLE did Ptolemy of Egypt think, when he forbade the export of papyrus, that his action might help the plastic surgeon. The people of Pergamum, in Asia Minor, where there was a library of over 200,000 papyri, had to find a substitute and turned to the untanned skins of sheep and other animals. Thus was evolved parchment (the word itself being etymologically derived from Pergamum), which has been used in the making not merely of books but also of musical instruments, boxes, and lampshades; and now it has been turned to surgical use by P. Baiocchi, who describes its commercial preparation, histology, surgical preparation and sterilisation, and rate of absorption (*Folia med., Napoli*, Oct. 15th, 1938, p. 1068).

As with many commercial substances, there is on the market an imitation, to which the following remarks do not apply. Baiocchi uses the finest of the three commercial kinds of parchment, made from the skins of lambs, kids, and stillborn calves, such as is used in book-binding. The possibility of infection by tetanus or by anthrax must consequently be rigorously excluded. Since parchment is an animal substance, prolonged boiling is out of the question. The commercial parchment has to be washed for half an hour with soap and water and scrubbed with a hard brush. Next it is soaked for three or four hours in a 5 per cent. solution of acetic acid, washed for twelve hours in running water, stretched between two double sheets of filter paper under pressure, and, when perfectly dry, placed for half an hour in a large Petri dish in an oven, in which the temperature must not exceed 250° F. for fear of scorching the parchment. Thus it is sterilised, and it can then be kept in iodised alcohol in a sterile container; but before use it has to be soaked for ten minutes in warm physiological saline to render it soft. Bacteriological control experiments have been made which show that this method of sterilisation is successful and enables the parchment to be used with safety in all plastic operations in which fresh fascia is now used.

Experiments were also made on the rate of absorption. Half a square centimetre was introduced into the peritoneal cavity of each of five guinea-pigs on the same date. In guinea-pig No. 1 the parchment was still much swollen at the end of five days; in the second animal it had begun to be absorbed by the tenth day; in No. 3 it was partially absorbed on the twenty-fifth; and animals 4 and 5 showed no trace of parchment on the fortieth and sixtieth days respectively. Three rabbits had a square centimetre of parchment introduced into the peritoneal cavity: No. 1 showed commencing absorption of the parchment's edges on the tenth day, whereas Nos. 2 and 3 showed no trace of parchment on the thirtieth and fiftieth days respectively. Equally good results were attained with parchment introduced into the subcutaneous connective tissue, muscles, liver, lungs, spleen, and knee-joint of guinea-pigs, rabbits, and dogs. In two rabbits a disc of dura mater was replaced by parchment; No. 1 showed commencing absorption on the fifteenth day, and No. 2 still had traces of parchment visible in a mass of newly formed connective tissue on the thirty-fifth day. No infection was observed.

NOTES, COMMENTS, AND ABSTRACTS

MEDICAL EDUCATION IN THE U.S.S.R.

AT a meeting arranged by the Society for Cultural Relations on Dec. 8th Major-General Sir Cuthbert Sprawson I.M.S. (retd.), who has had much experience in medical education and the organisation of health services in India, described his investigations in Soviet Russia last summer. Prof. W. Le Gros Clark, F.R.S., was in the chair.

The medical problems interested the lecturer particularly because of the analogy between Russia and India. Both are large countries, with a tremendous rural population living chiefly in villages and engaged in agriculture and very backward until recent years. The main difference between them is that India is progressing slowly, whereas Russia is going ahead by leaps and bounds. What first strikes the visitor to Russia is the fact that the population seems to consist mostly of young people, old persons being very few and far between. Indeed, 46 per cent. of the population have been born since 1917, and persons aged sixty and over form only 6 per cent. and are mostly women. This state of affairs is attributed to losses during the Great War, the civil war or revolution, and the typhus epidemics. The second thing that strikes the visitor is that everybody works, except the children, who are parked out from the age of two months to eighteen years. Until their second year they are in creches; from one year to four years they attend a nursery, from four to eight a kindergarten school, from eight to sixteen they are what are called pioneers at school, and from sixteen to eighteen they work in a technical school in preparation for entering a factory or one of the professions.

The medical profession is, as in India, divided into two classes. In India there are graduates and licentiates. In Russia the university graduates have five years' medical training after ten years' ordinary general education. The inferior kind of doctor (feldscher) has only seven years' general schooling and three years' medical training. This dual standard dates from before the late war. The Bolshevists tried to abolish it, but owing to the extreme shortage of medical graduates after the two wars and the typhus epidemics they found that they had to keep the two classes. The numbers of both classes are increasing at an enormous rate. There are now 96,000 students of the better class and 45,000 of the inferior. Leningrad alone has 10,000 of the superior students, and the First Leningrad Medical Institute has 3000 of them. (A new batch of 900 has just been admitted.) At this institute three-quarters of the students are women; but the proportion elsewhere is generally about half. They are obviously overcrowded and their education must suffer. At the First Leningrad Medical Institute there are 1200 beds, placed much closer together than in England. But Sir Cuthbert was informed that another 1000 beds were available elsewhere. The laboratories were well equipped except with microscopes, each of which is shared by four students. The classes are quadrupled, but even so the size of the class (225) is unwieldy. There are 72 institutes educating medical students in Russia. Some of these are hygiene institutes, but they teach general medicine also.

There is much earlier specialisation in hygiene. After the first three years the student is supposed to choose between general medicine, public health, and pædiatrics. If he is at a hygiene institute and chooses general medicine or pædiatrics he is usually transferred to another institute, but not necessarily. In 1938 25,000 new students entered the medical profession, 4000 selecting pædiatrics and 3200 public health. It is acknowledged that the five-year course is not as good as it might be, but the Soviet Union is making a tremendous effort to raise the numbers of the doctors before lengthening the curriculum. In this connexion it must be remembered that the general population is increasing by 3,000,000 each year. At present there are 107,000 doctors: 1 to every 1588 people. The Soviet Government is aiming at 1 to every 1000.

There is almost no private practice. After qualifying every doctor in State service (which means nearly all of them) has to go, except for the first year, wherever the Soviet orders. Those who have done best in their final examinations are sent to the worst and loneliest places—e.g., Kamschatka—but they get compensation in more pay, longer holidays, a car, and a milch cow. There is an excellent scheme of post-graduate training whereby every doctor attends a special post-graduate teaching hospital for 3–6 months every three years. There are 10 of these special hospitals in Russia.

IN MEMORY OF BROWN-SÉQUARD

THE Comité des Travaux Historiques et Scientifiques has set up a memorial tablet to Brown-Séquard in the University of Nice.

Born in 1817 at Port-Louis, capital of Mauritius, Charles Edouard Brown-Séquard was the posthumous son of an American ship's captain. His mother was French and took him to France when scarcely out of his teens. In Paris he studied medicine, eking out his meagre resources by coaching his more backward fellow-students. He qualified as a doctor in 1846 and started on a career of restless research and travel. In his journeyings between France, England, America, and Mauritius, he is said to have crossed the Atlantic some sixty times. New York, Boston, Richmond in Virginia, Philadelphia, London, Paris, and Nice, all knew him in turn. At Richmond he was a professor of physiology, at Philadelphia he was attached to a hospital for epileptics and paralytics, at Harvard University he was a lecturer on pathology, in London he was an honoured guest at meetings of medical societies, and in Paris he was by turns a none too successful physician, an inspiring teacher, and a ceaselessly inquiring research worker.

In his investigation of the actions of the endocrine glands he experimented on himself. Having given himself injections of a testicular extract, he wrote in 1889:—

> "I am 72 years old; my general vigour, which had been considerable, has notably and gradually diminished during the past ten or twelve years. Previous to the investigations I am engaged on, I had to sit down after standing for half an hour at work in the laboratory. After three or four hours, or sometimes even after two hours, of experimental work in the laboratory, I left it exhausted, although I had been seated. After driving home at 6 o'clock in the evening after some hours thus spent in the laboratory, I was for several years so exhausted that I had to go to bed almost as soon as I had taken a hasty meal. Sometimes my exhaustion was such that, in spite of my need for sleep and a drowsiness which prevented me from even reading the newspapers, I could not fall asleep for several hours. Today, after the second day and above all the third day after the first injection, all this is changed, and I have regained at least all the strength I possessed several years ago."

Brown-Séquard's fellow scientists were more amused than impressed by these and similar observations, which at the time gained as much notoriety in music-halls as in scientific laboratories. But his contributions to experimental physiology and pathology, especially of the central nervous system, were so outstanding that he succeeded Claude Bernard at the Collège de France in 1878 and was elected member of many scientific bodies. Having outlived his three wives he died on April 1st, 1894, aged 77, an intellectual giant, whose stature would have been even greater, according to Prof. Achard, had his path through life had fewer digressions.

AERODYNAMICS OF THE FIREPLACE

EVERYONE who reads the advertisements of rival heating systems must realise that the domestic open fire is a troublesome, wasteful, and dirty anachronism; yet, since most of them continue to give it their support, its traditional and perhaps unpractical charms must largely outweigh its faults. According to Prof. P. O. Rosin, who has been investigating fireplace design for the British Coal Utilisation Research Association, many of these faults can be cured by improved construction and proper selection of fuel. In order to study the flow of gases he used an ingenious transparent celluloid model in which the solution of coloured briquettes of salt in water took the place of the combustion of coal.

In a lecture to the Institution of Civil Engineers a fortnight ago Prof. Rosin pointed out that with an open fire the quantity of air passing up the chimney may be forty times that required for burning the coal, whereas in other combustion appliances very little more passes up than is needed for combustion. In the ordinary hearth bottom grate the air flows over the surface of the coal, so that the fire burns in an almost dead space and is hardly affected by the draught up the chimney. The rate of burning is governed by the combustibility of the fuel and by the arrangement and temperature of the fuel bed. In such a grate increasing the draught merely chills the fireback and cools the room by carrying back into the chimney the heat that has just been emitted. The draught only makes its influence felt if the height of the chimney opening is reduced below the usual 20 inches, and this very soon begins to affect the heat emission. In a hearth bottom grate the main essential is then to use a fuel of high natural combustibility and volatile content. In a raised stool grate, on the other hand, much of the air passes through the fuel and the influence of draught is more significant. Unless the "throat" of the fireplace is well streamlined and the angle between the flue and the fireback is sufficiently obtuse, a great deal of the chimney draught will be wasted in the formation of eddies, and if there is a sharp-edged canopy smoke will form in a pocket behind it and will escape into the room.

As a result of Prof. Rosin's studies it is now possible to make fairly definite recommendations as to the ideal shape of the chimney "breast" and the back of the fire. He has found, too, that the combustion and distillation gases fill only about a third of a normal chimney, and with efficient streamlining there is no reason why the cross-section of chimneys should be more than 20–30 sq. in. instead of the 80 sq. in. laid down as the minimum in existing by-laws. Such narrower chimneys would save space and, by preventing the premature chilling of the combustion gases, by eliminating eddies, and by raising the velocity of the rising air, would largely prevent the deposition of tar and soot.

HANDLING THE YOUNG CHILD

THE phases of development normal to the child in his progress from infancy to adult life are outlined with sympathetic understanding by Dr. Enid Smith.[1] We learn of his love of power and his love of achievement, his desire for adventure and the difficulties and dangers which have to be experienced and overcome during his earliest years. The author's theories are clearly stated and as she takes into account the interaction between physical, mental, and emotional needs she is able to give practical hints on ways to help the child to cope with his troubles. The handling of children is not quite so easy as Dr. Smith would have us suppose, but confidence is probably the most important factor of success and will certainly be engendered in the reader of this able and cheerful guide to child-life.

[1] The Right Way With Children. Second edition. By Enid Smith, J.P., M.B. London: The Epworth Press. 1938. Pp. 177. 2s. 6d.

22,000 BOOKS

Lewis's Lending Library was established in 1848 to lend out books of scientific or philosophical interest not to be found in the ordinary circulating libraries. That this service has proved of wide value is shown by subscribers representing druggists, chemists, electrical engineers, and others. It is of course to the medical student and practitioner that the library is first and foremost of service. One guinea a year will make any doctor free of a choice of some 22,000 volumes. A new edition of the Catalogue, Part I (Authors and Titles), has been revised to the end of 1937. The price is 16s.; to subscribers to the library 8s. Part II (Classified Index of Subjects) is promised early in 1939.

THE FEMALE INEBRIATE.—Dr. Courtenay Weeks writes: "From time to time medical practitioners are faced with the problem of what to do with female inebriates, whose financial position prevents them from being sent to the more expensive nursing-homes. May I bring to their notice the excellent shelter home run by the C.E.T.S. and the Women's Union at Highbury, London, N.5. I can vouch for the home and for the care with which the inmates are treated. Full particulars may be obtained from Miss F. E. Relf, Women's Union, 27, Gordon-square, W.C.1."

ANTI-GAS MEASURES.—Dr. John Fenton's "Synopsis of Defence Against Gas" (London: Dale, Reynolds and Co. 1938. Pp. 60. 1s.), which was first published less than two years ago, has now reached its third edition. The main additions are descriptions of the latest types of clothing to give protection against blister gases and of the organisation of first-aid posts. The synoptic arrangement allows most of what the general public needs to know of the subject to be condensed in a few pages.

ELASTOPLAST FOR THE SURGERY.—Messrs. T. J. Smith and Nephew Ltd. (Hull) now issue their Elastoplast adhesive bandages in a white-enamelled metal box that can be screwed to the surgery wall. The container holds four rolls of bandage (two 4 in., one 2 in., and one 1 in. wide) separated by metal partitions. There is a neat arrangement for easy replacement of the rolls.

BRITISH ORTHOPÆDIC ASSOCIATION: CORRIGENDUM.—Referring to the report appearing on p. 1361 of our last issue, Dr. Frances Braid writes: "The account of what I said about osseous dystrophy following icterus gravis neonatorum is not quite accurate. The second part of the last sentence should read '*dysfunction* of the liver, evidence of which was present in *one* of the patients . . .'"

MESSRS. CADBURY BROS. LTD., of Bournville, have again sent us a representative collection of their attractive products. They make chocolate to eat and chocolate to drink, chocolate in the block and chocolate in the tin. They also provide innumerable selections of chocolate sweets which, as Christmas presents, are both easy to give and easy to receive.

INTERNATIONAL HOSPITAL ASSOCIATION.—The sixth biennial congress of the International Hospital Association is to be held at Toronto from Sept. 19th to 23rd, 1939. The programme is being arranged by Dr. Malcolm MacEachern, president of the association and associate director of the American College of Surgeons, with the assistance of Dr. Harvey Agnew, secretary of the Canadian Hospital Council and president-elect of the American Hospital Association; Dr. William Caldwell, chairman of the congress committee and assistant medical director of the Canadian Red Cross; and the secretary, Mr. Carl Flath. Forty study committees will report on their work during the preceding two years, and many papers will be read.

All particulars of the subjects to be discussed and of the travel arrangements to Toronto and back can be obtained from the joint hon. secretaries of the association, 17, Bloomsbury-square, London, W.C.1.